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AUGUST 24, 1957
VOL. 153 — NO. 8

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

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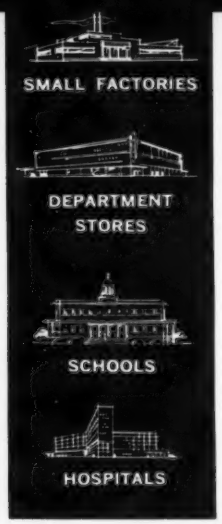
Guaranteed Circulation This Issue
12,083 of Which 11,501 Is Paid

ANSWERING SERVICE

Louise Hanan, California arthritis victim, successfully operates a 24-hour telephone answering service in her home, handling between 118 and 150 calls per day for her 32 customers. See page 34 for complete story.

MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING



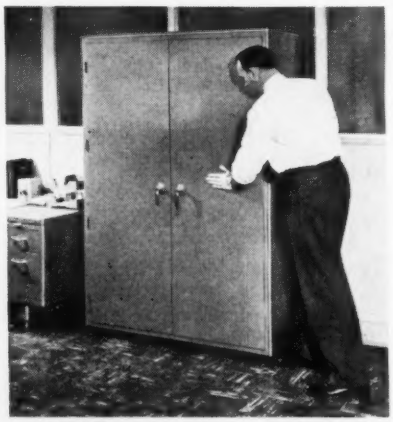
for these subscribers..

with these needs...

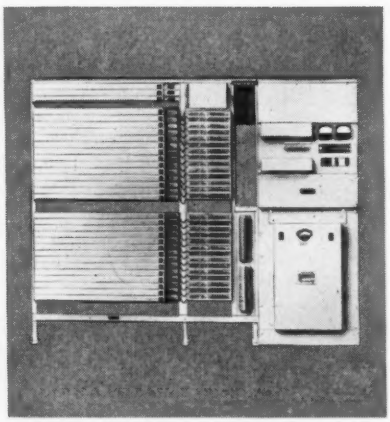
External communications

Internal communications

these XY® PBX's



F-40 PBX. Cabinet looks like a regular office wardrobe; can be rolled anywhere. Its dimensions are 6′ 4″ high, 4′ 1″ wide, 2′ deep.



F-80 PBX. All switching equipment is contained in a single compact bay. Its approximate dimensions are 6′ high, 7′ wide, 1′ deep.

XUM

Now you can sell attended PBX service to commercial subscribers who need a compact, internal dial system with central office connections—but lack the space for cumbersome bays and power supply.

The Stromberg-Carlson F-40 PBX offers a maximum capacity of 40 lines and 8 trunks, yet it takes only 8 square feet of floor space. You install it simply by connecting the telephone cable leads and plugging in the self-contained power supply to a standard 110-volt AC outlet.

The attendant's cabinet, about the size of an adding machine, uses keys for answering and completing calls. All stations are equipped with standard instruments.

For Larger Systems: the F-80

Subscribers who need more than 40 lines—but do not require a selector-type system—will find the XY F-80 PBX ideal. This system provides up to 80 lines, 14 talking paths, 10 central office trunks and 4 information trunks. It is wired for night answering service.

The F-80 offers single-party service, restricted and "executive-right-of-way" service, and conference and code call facilities. It is furnished with cord-type attendant's cabinet in smart, and modern styling.

With these Stromberg-Carlson PBX's you can give an additional lift to your commercial revenue. Phone or write your Stromberg-Carlson representative for descriptive literature and hard-hitting selling aids.

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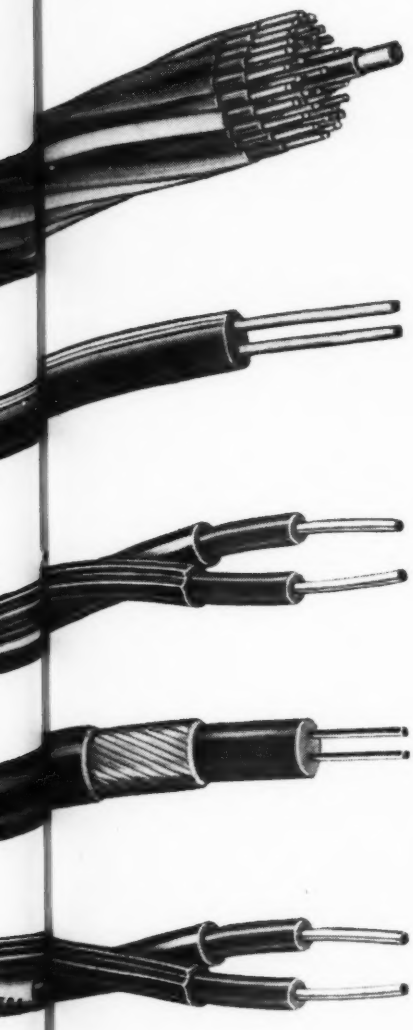
WB

WB has that which so many others have yet to gain . . . EXPERIENCE

DISTRIBUTION WIRE?



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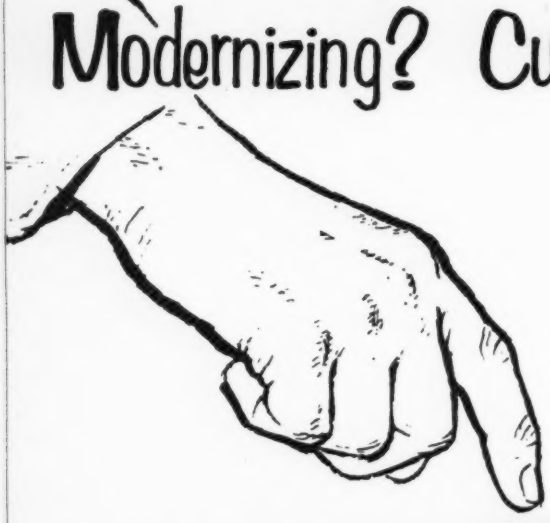
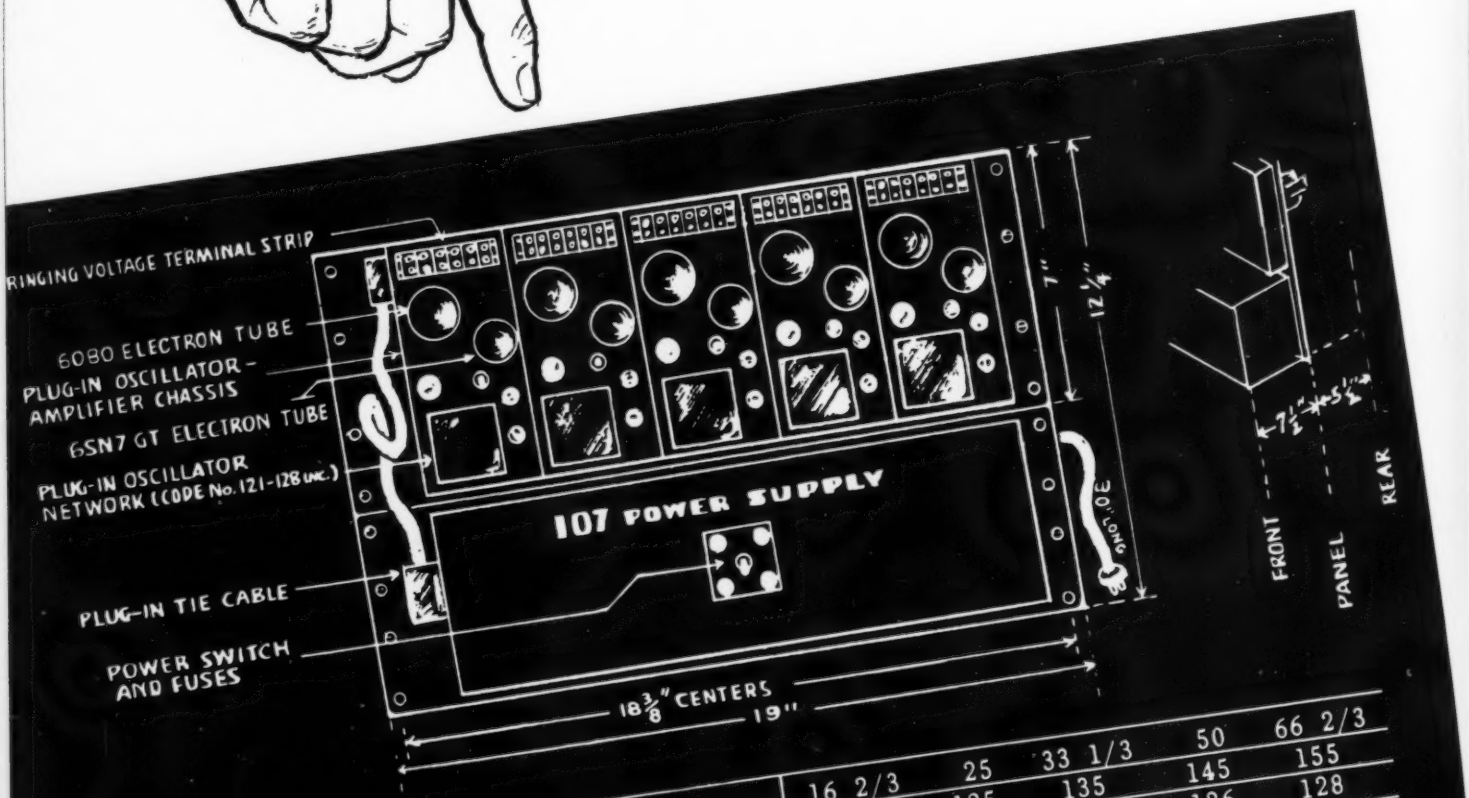
Modernizing? Cutting maintenance costs? Then.





Code No. 101 Harmonic	Frequency	16 2/3	25	33 1/3	50	66 2/3
	*Nom. Ring. Volt.	105	125	135	145	155
	Osc. Net. No.	121	123	124	126	128
Code No. 102 Synchromonic	Frequency	16	30	42	54	66
	*Nom. Ring. Volt.	105	125	135	145	155
	Osc. Net. No.	121	124	125	126	128
Code No. 103 Decimonic	Frequency	20	30	40	50	60
	*Nom. Ring. Volt.	105	125	135	145	155
	Osc. Net No.	122	124	125	126	127
Code No. 104 Special	Frequency	20	30	42	54	66
	*Nom. Ring. Volt.	105	125	135	145	155
	Osc. Net. No.	122	124	125	126	128

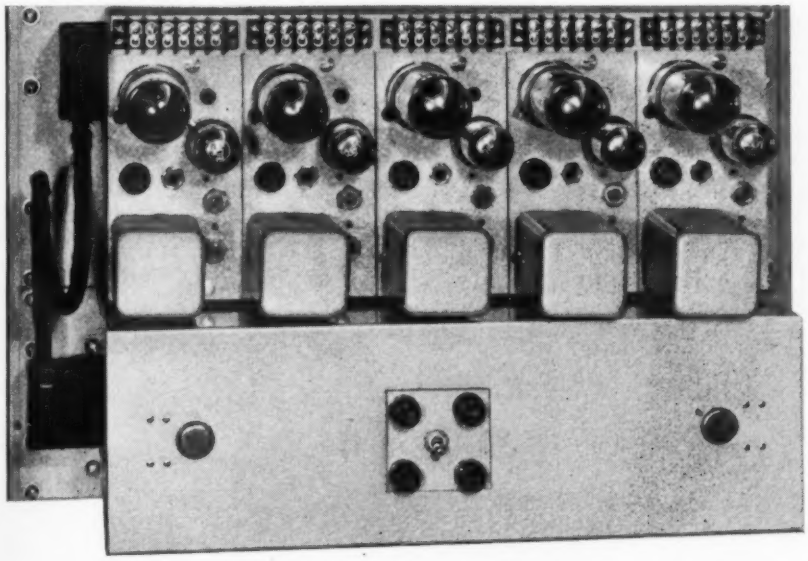
*Voltages adjustable from values indicated.

Any combination of five ringing frequencies available on special order.

XUM

look at the advantages of the

KELLOGG ELECTRONIC RINGING GENERATOR



More and more independent telephone companies are adopting the Kellogg Electronic Ringing Generator as standard equipment. Here are a few of the many reasons:

- **LESS MAINTENANCE** . . . No moving parts . . . no contacts to clean or replace. Plug-in components . . . not damaged by shorted lines . . . experience proves tube life normally exceeds 18 months.
- **NO CROSS-RING PROBLEMS** . . . Extreme frequency stability . . . precise, easily adjustable frequencies.
- **FLEXIBILITY** . . . Provides any combination of 5 or fewer ringing frequencies. All ringing frequencies are independent of each other and/or frequency of power source.
- **EFFICIENT** . . . All frequencies continuously available . . . furnishes enough power for 1000 or more lines.
- **COMPACT** . . . Mounts on standard 19" relay rack . . . requires only 12¼" of vertical space.

Write for your copy of the bulletin on the Kellogg Electronic Ringing Generator, today!

NEW ADDRESS!

Kellogg Sales Offices have moved to:

6650 S. Cicero Avenue, Chicago 38, Illinois.

The new phone number is: POrtsmouth 7-6900.

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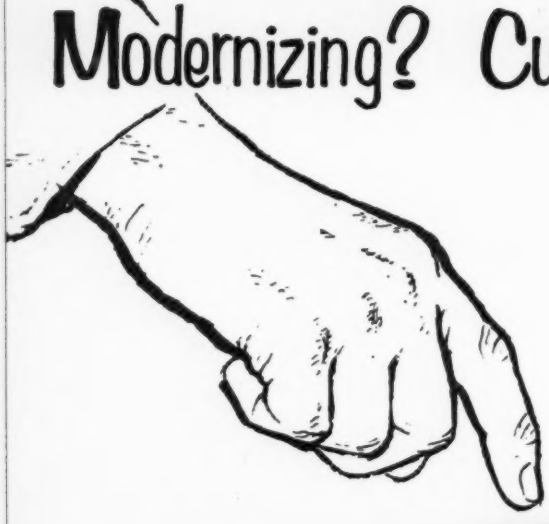
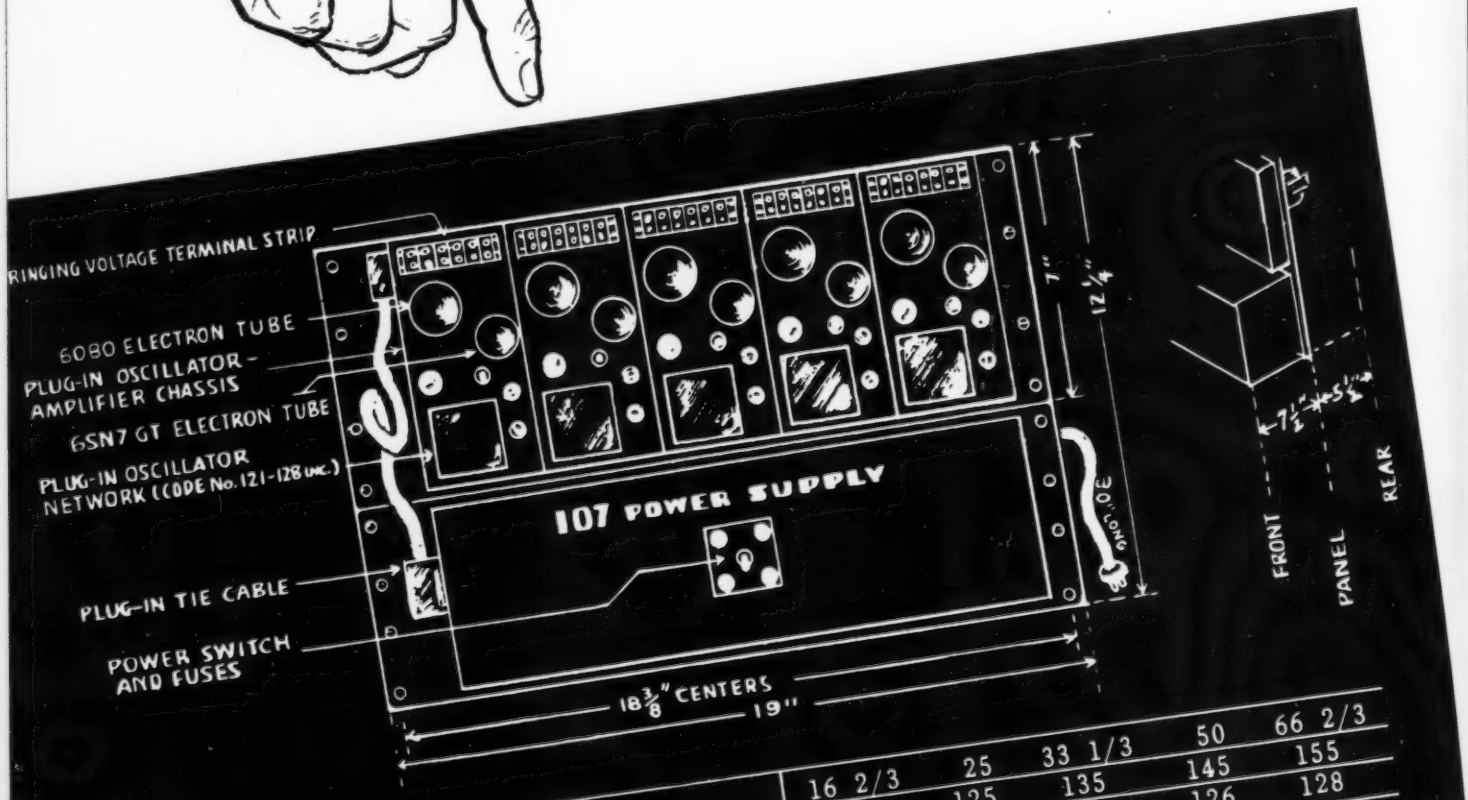
Modernizing? Cutting maintenance costs? Then





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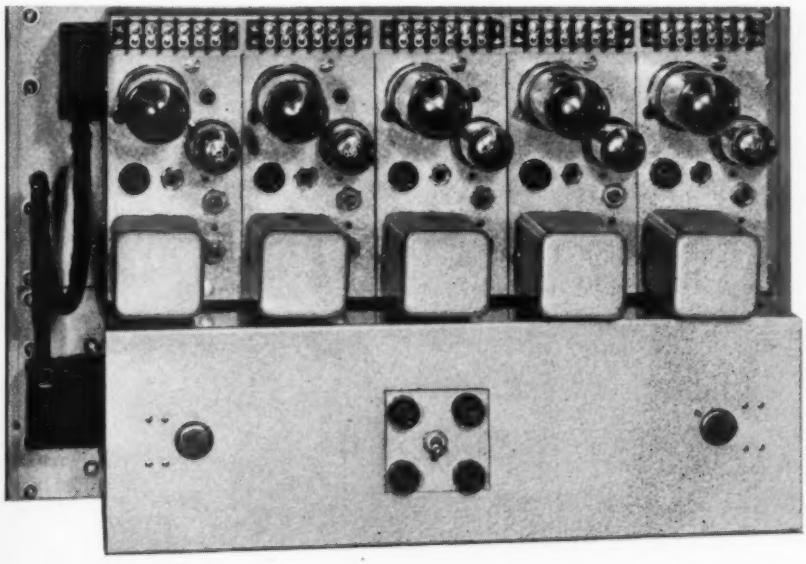

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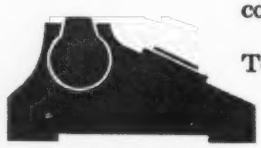
CHARTREUSE YELLOW

TAWNY GREEN

INDIAN IVORY

CORAL SAND

EMPEROR BLUE

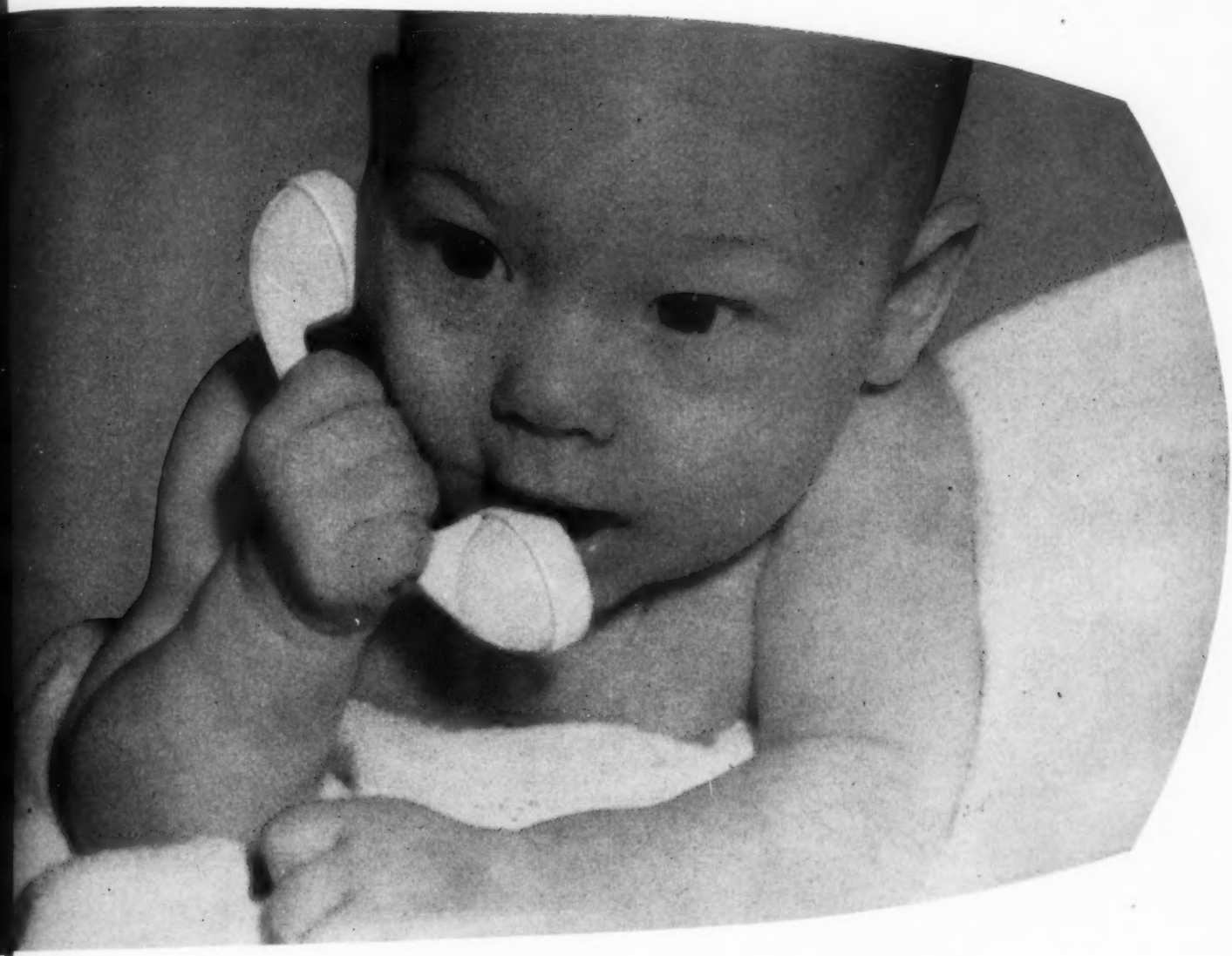


EXECUTIVE GRAY

"Junior" is growing up in an age of color! By th time he grows up and orders his first telepho installed, all residential and most office phones wi be in colors. But that's twenty years from now.

TODAY — thousands of subscribers want colore telephones — thousands more can be "sold" o colored telephones.

TODAY — you can order North Color-Tone tel



FOR THE *Young in Heart*

phones from stock—in a choice of Richland Red, Chartreuse Yellow, Tawny Green, Indian Ivory, Coral Sand, Emperor Blue, and Executive Gray.

TODAY — when you buy North Color-Tone telephones you get merchandising aids — mailers, envelope stuffers, newspaper ad mats, counter cards, display materials—to help you merchandise Color-Tone telephones as revenue producing extensions.

The North Color-Tone telephones are the finest telephone instruments you can offer your subscribers—in transmission, in reception, in color styling!

The North merchandising program is the most powerful assistance you can get to help YOU increase your extension telephone revenue!

Write for full details or see your North sales representative.

NORTH ELECTRIC COMPANY

601 SOUTH MARKET STREET • GALION, OHIO

FLASHES AND PLUGS

VITAL STATISTICS. The telephone relayed some momentous news to a Toronto woman recently—it rang to tell her she was among 79 persons killed when a Maritimes Central Airways plane crashed near Quebec.

Answering the telephone call herself, the astonished woman said she had planned to return on the plane, but after attending a family reunion in Sittingbourne, Kent, went on to visit her son in Germany.

While there a telegram urged her to hurry home because her husband had been taken ill. So she took an earlier plane home.

•

LOOKING AHEAD. A Grand Rapids Junior College honor student, Edith Gates, 50, is preparing for retirement from her switchboard by seeking a college degree.

Miss Gates, a Michigan Bell Telephone Co. long-distance operator for 25 years, will be eligible for retirement in five years.

She became a part-time student four years ago and is working for a bachelor's degree and a teaching certificate.

•

CHIVALRY LIVES. The *Manchester* (England) *Guardian Weekly*, with the flourish it customarily displays on such occasions, in its Aug. 1 issue reported that:

"It is always pleasant to record instances of undying chivalry. A young woman who wears court shoes, size 3, felt one of them slip off her foot as she boarded a moving train recently at Waterloo.

"She got out at London Bridge, hopped to a bench and explained her predicament to a porter. He immediately telephoned to Waterloo, and the guard of the next train arrived flourishing the shoe and exclaiming: 'My, what a little foot!'

"Since then, on her daily journey, she has not surprisingly been hailed by both of them with cries of 'Good morning, Cinderella!' "

•

EYE OF THE BEHOLDER. The frothing waters of Niagara Falls reminded a visitor of a household task, but a long distance telephone call soon fixed the matter. The lady took one look at the falls, then rushed to the telephone and called the Kalamazoo fire department. Firemen climbed in a window of her home and disconnected the electric coffee pot she'd forgotten to unplug when she left on her vacation. The crew found the coffee boiled away, no damage.

CHANGE OF ADDRESS

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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

August 24, 1957

CONTENTS

IN THE NATION'S CAPITAL 17
By Francis X. Welch

SCHOOL BY TELEPHONE AN AID TO THE HANDICAPPED 19
By Frank E. Huettner

THE PUBLIC AND DIAL CONVERSIONS 21
By Marvin Diefendorf

SQUARE WAVE TESTING—Part 2 23
By Harold B. McKay

BEATING THE PAPER WORK JINX 26
By William J. Milford

THE OPERATOR'S CORNER 28
By Mayme Workman

THE PLANT MAN'S NOTEBOOK 30
By Ray Blain

PLANT MAN'S QUIZ 32
By Ray Blain

ARTHRITIS VICTIM OPERATES A SUCCESSFUL TELEPHONE SERVICE 34
By George A. Bridges

HOW TO FINANCE NEW TELEPHONE FACILITIES IN TIGHT MARKET 38
By George W. Warnecke

COURTS AND COMMISSIONS 42

H. D. FARGO JR., *President and Director of Advertising* • A. J. STULTS, *Vice President and Advertising Manager* • R. C. RENO, *Vice President and Editor* • DAN S. FARGO, *Vice President and Managing Editor* • FRANCES E. CRETCHER, *Associate Editor* • FRANCIS X. WELCH, *Washington Editor* • RAY BLAIN, *Technical Editorial Director* • HAROLD B. McKAY, *Electronics Editor* • MAYME WORKMAN, *Traffic Editor* • VIVIAN RYDEN, *Circulation Manager*.

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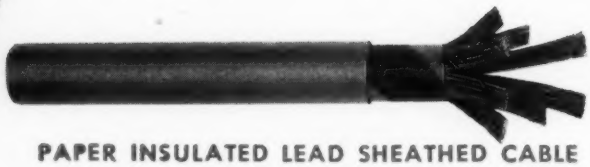
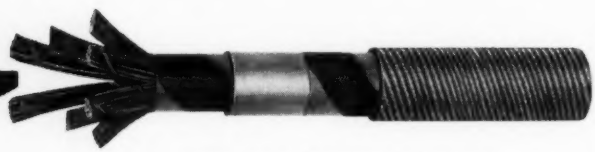


PAPER INSULATED LEAD SHEATHED CABLE

SUPERTEL TYPE VII DIRECT BURIAL CABLE



JUTE PROTECTED CABLE

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Ever wish you could *simplify* this business of ordering cable?

You can—and here's how.

Just order *all* of your cable requirements from General Cable, thru Automatic Electric. General Cable offers you the most complete line of quality telephone cables in the industry. You send one order, to one source—get one shipping date and one invoice.

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XUM

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STEEL TAPE ARMORED CABLE

TEXTILE TERMINATING CABLE

FOR QUICK DELIVERY

PAPER INSULATED LEAD SHEATHED CABLE
Available in all standard exchange, quadded and composite types.

SUPERTEL TYPE VII DIRECT BURIAL CABLE
Armored with 2 aluminum tapes, tough, polyethylene jacket overall.

STEEL TAPE ARMORED CABLE
For direct burial where maximum protection from mechanical injury is required.

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For direct burial where favorable soil conditions exist.

SUPERTEL TYPE III AERIAL CABLE
Weighs less than half as much as lead cable. Economically replaces multiplicity of open wires.

TEXTILE TERMINATING CABLE
Available in 101-606 pairs, 22 A. W. G., standard color codes.

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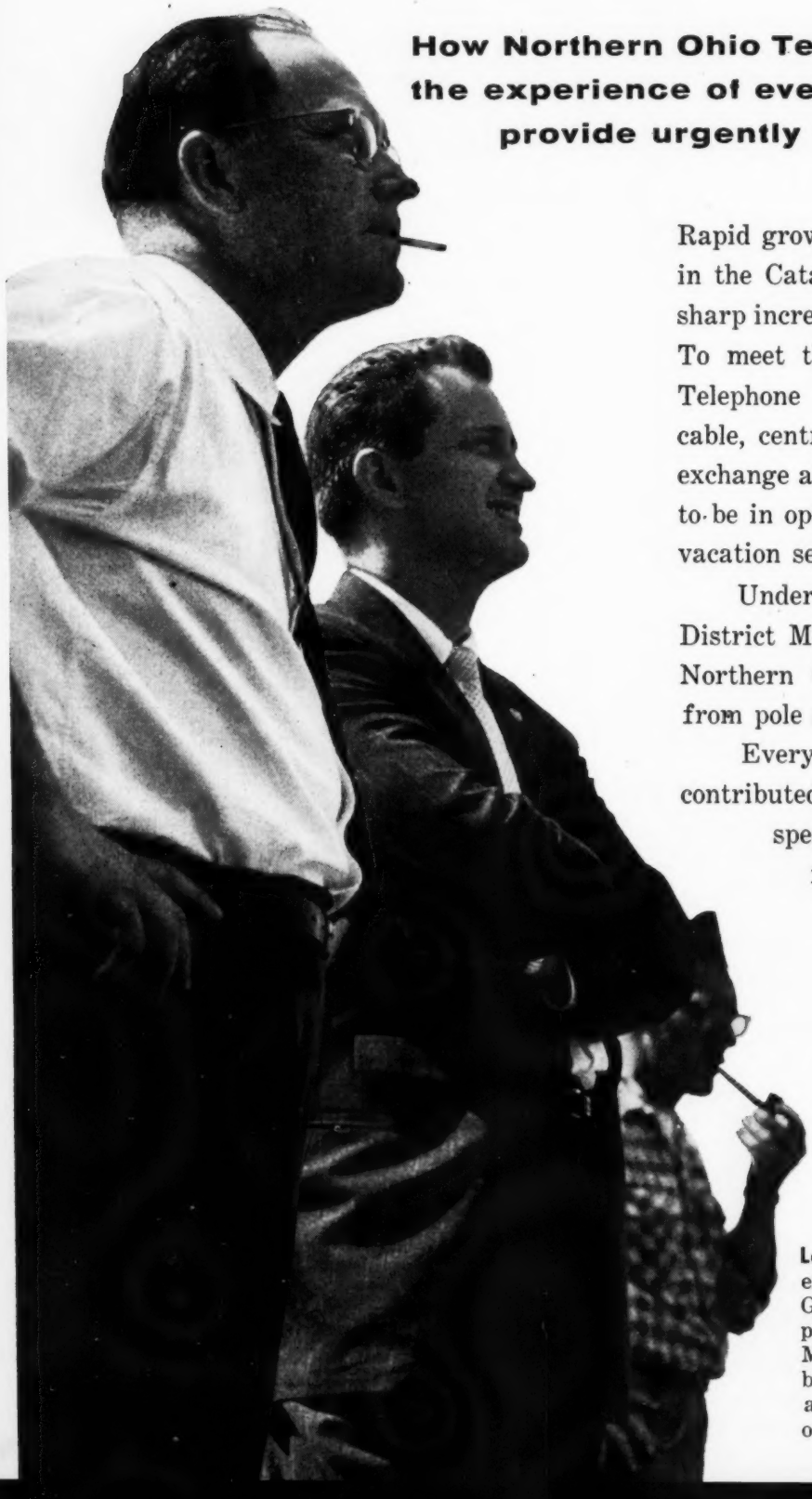
GENERAL TELEPHONE SYSTEM

They met the "in-service" deadline at Catawba Island

How Northern Ohio Telephone Company used the experience of every man on their team to provide urgently needed service on time



Rapid growth of the popular vacation country in the Catawba Island area of Ohio caused a sharp increase in the need for telephone service. To meet these new demands Northern Ohio Telephone rushed construction of pole lines, cable, central office equipment for a new sub-exchange at Catawba Island. The facilities had to be in operation before the start of the next vacation season.

Under the skilled direction of Jim Peltier, District Manager of the Port Clinton area of Northern Ohio each task was programmed, from pole setting to cable splicing.

Every man connected with this project contributed generously from his own skills and specialized experience. Result: the new facilities went into service on time.

Left, Jim Peltier, District Manager of Northern Ohio Telephone and George Ostrander, Graybar Telephone Specialist, watch the pulling in of new cable at Catawba Island. Mr. Peltier has designed and patented a block for pulling in rural distribution cable and enjoys the satisfaction of having his own invention speed up the work.

Above, Clayton Stager, lineman with Northern Ohio Telephone Company, guides a new 12-quad 19 gauge cable, plus 303 pair 19 gauge, supplied by Graybar, as it is pulled in.

Useful life in a telephone pole depends upon wide selection of wood and its treatment to resist weather and insects. Here William Nelson, (left), sales representative of International Creosoting & Construction Co., Warren Ritter, (right), Northern Ohio Purchasing Agent, and George Ostrander, (center), check up on one of the treated pine poles delivered by Graybar for this carefully programmed construction job.

And, speaking of key materials, William C. Henry, President of the Northern Ohio Telephone Co., has this to say about Graybar:

"In meeting rigid schedules on important construction projects as well as routine needs, we expect and require from our suppliers the best and newest in equipment and materials, plus on-time deliveries. Graybar people work as closely with us as the members of our own staff. We can always count on their cordial teamwork."

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XUM

IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR

REA Administrator Hamil explains future of cooperatives in the telephone business in address before American Institute of Cooperation. Move to transfer telephone excise tax to states might mean difficulty in removing the tax. Alabama has first telephone ever installed on senate floor.

THE PLACE of the non-profit co-operative in the future of the telephone business was the interesting subject to which REA Administrator David A. Hamil addressed himself in an address on Aug. 21 before the American Institute of Co-operation. The 1957 meeting of the institute was at Fort Collins, Colo. Administrator Hamil recalled that since the REA rural electrification program was started over two decades ago about 1,000 rural electric cooperatives, using almost 3 billion dollars of government financing, have appeared on the scene. They are serving approximately 4½ million farm families and other rural consumers, most of whom are members of the co-ops. In addition there are some small electric cooperatives which operate without REA financing.

The REA telephone picture, of course, is quite different for a number of reasons. First of all, REA did not actually get into the rural telephone lending business until 1950, although first authorized to do so in 1949. Furthermore, the rural telephone loan provisions of the law require REA to deal with private companies as well as cooperatives. Especially where they are already operating. In the case of rural electrification loans, REA has dealt almost exclusively with cooperatives.

But what principle governs, or should govern, the question of whether a cooperative or private business should be chosen as the organization to render service? Administrator Hamil put it on the basis of economic need. He said that "in making an inventory of this country's co-ops, we note that the strongest and most persistent develop where local people are unable to satisfy their needs at a reasonable price through existing channels." This might be stated in another way by saying that where business opportunities do not promise to yield sufficient revenue to attract a profitable commercial investment, the economic need must be served—if at all—by a non-profit investment. That is what a cooperative is, essentially. It is an organization of members or people cooperating to supply their own needs on a non-profit basis. It was in recognition of this situation that Congress allows cooperatives immunity from income and other taxes, and gives them specific economic advantages.

Administrator Hamil pointed out some difference, however, between the operation of a cooperative in the rural electric as compared with the rural telephone field. First of all, there were nearly four times as many farms which already had telephone service (38 per cent) when REA started its rural telephone program as there were farms which had electric service when the rural electrification program was started. Furthermore, when REA loans were made available to establish rural telephone service, existing commercial companies were the first to apply and receive loans. Out of 550 telephone borrowers today about 350 are commercial companies and a little over 200 are co-ops, according to Hamil. The administrator went on to say:

"It is important to know the different conditions which prevail in the two industries—electric and telephone—outside the cities. In 1935, and for many years after that, there were in most states great rural areas devoid of any electric service at all. Telephone systems, in contrast, spread a network of lines that in most states leaves a great number of small unserved pockets but no large areas of sufficient size to support a completely new system. It was comparatively easy for a few hundred farmers to organize a co-op to serve an area covering a large part of a county or even several counties where no power company considered it profitable to build lines.

"But when those same farmers consider the formation of a telephone co-op, they find that the state regulatory commission has already assigned the territory in which they live to one or more telephone companies or mutuals which offer service—poor though it may be in many cases—to those who live along the roads or near the small towns. If farmers want to form a co-op to serve themselves on a non-profit basis, they find that they must first buy up the existing properties and, in many states, obtain certification from the state regulatory body. Many of the present cooperative-type REA telephone borrowers were formed in this way or from a combination of several existing mutuals and farmer-owned switcher lines."

An important factor in rural telephony is the need for connecting company agreements. Power can be supplied locally on a satisfactory basis. But, rural telephone communication is of very little use on a local basis because long distance calls are an important part of rural service, accounting for a large share of the revenue. These calls must be made through an existing network of toll lines owned and operated by the Bell System and some of the larger Independent companies. Likewise a rural power system can operate outside of a town, and most co-ops do operate that way. But

rural telephone service is almost useless unless the farmer can talk to people in the towns and cities. Hence, the importance of connecting company agreements.

Hamil touched on one other important difference between rural electric and rural telephone service. The trend in the cost of service and the resulting impact of service rates. Electric rates have been coming down over the past two decades because electricity is a diminishing cost type of industry, whereby increasing volume of business lowers unit operating costs. Telephone service, on the other hand, works the other way—if anything. Each additional telephone call costs just about as much as the previous one. Furthermore, in a period of advancing prices for the establishment and operation of modernized equipment, quite a spread develops between what the farmer used to pay and what he has to pay for modern high-grade service. Hamil said on this point:

"The farmer who has been accustomed to paying 75 cents a month for service on his old crank-type telephone is dismayed to learn that this modern dial service is going to cost him $3.00, $4.00, or more. The reason for this is easy to understand but not always readily acceptable to the farmer who is trying to stretch his dollars. Once the electric system is built, the consumers can use increasing amounts of electricity with very little additional expense. Millions of members of rural electric co-ops have responded to this favorable economic phenomenon by doubling their use of electric power every seven years. The more they use the less each kilowatt-hour costs. Telephony is an industry that has relatively fixed unit costs."

Does the federal REA control the co-ops? Administrator Hamil went to some pains to stress his contention that REA does not interfere in any way with the origination and control of telephone co-ops. The fact that they borrow money from the federal government, he said, is not unique. Commercial telephone companies do the same thing. They borrow not only from the REA but from other lending sources. Furthermore, Hamil actually held out an incentive for co-ops to get out of debt (by paying their loans) to the federal government. This would remove even the REA creditor responsibility and assure their independence. As Hamil put it:

"These co-ops are not government-owned. They are not government-controlled. REA does not own a mile of line or operate a single generator. The rural electric and telephone co-ops are home-owned and locally controlled by the consumers and subscribers they serve. Members elect directors at the annual meeting of the co-op, with one vote per member. The board then selects a system manager who in turn hires a staff to operate the enterprise. . . .

"I know that you are jealous of your independence and proud of your freedom from government hold and restraint. The genuine cooperative must be responsive to the will of its own membership and not beholden to some other power. The rural electric and telephone co-ops, in repaying their loans promptly and replacing REA financing with their own capital, are insuring their future against any remote possibility of government domination."

In closing, the REA Administrator noted that nearly a half of the nation's farmers still do not have any telephone service. REA is concerned about that. What can be done? First, if existing telephone companies or other organizations can provide needed service, that is one workable solution. Second, perhaps some new combination is necessary by merging or acquiring property. REA field representatives are on the lookout, according to Hamil, for instances where a number of small companies or mutuals or farmer-owned lines can be combined into a new corporation which can qualify for an REA loan.

REA will consider any reasonable plan, according to its boss. The new corporation does not have to be a non-profit co-op. It can also be a commercial operation. What REA can do, as a lender, "depends on what the rural people and the rural system operators are willing to undertake." Mr. Hamil stressed that REA does not determine who will provide service and what the form of the organization will be. REA's interest, the administrator said, lies in getting a telephone to the farmer who does not have one, and who needs one. That is the way he explained REA's willingness to go along with either a cooperative or commercial loan application, under such circumstances.

S. D. Cooperative Gets $316,000 Loan

A loan of $316,000 to improve and extend rural telephone service in Rock County, Minn., and Minnehaha County, S. D., was approved the week of July 28, by the Rural Electrification Administration, the U. S. Department of Agriculture announced on Aug. 13. The loan was approved Aug. 5 for the Garretson (S. D.) Cooperative Telephone Association.

This new borrower plans to use these funds to convert its magneto system, serving 607 subscribers, to dial, and to serve 43 farm families in the area now with no telephones.

In addition, the cooperative provides switching service to 38 rural families on subscriber-owned lines—the Juleson Telephone Co. and the Springwater Telephone Co. in the Garretson vicinity. The borrower proposes to acquire these facilities and to integrate them into its expanded system.

New construction scheduled by the cooperative includes an automatic exchange at Garretson and 15 miles of line. Of the existing 197 miles of line, 177 miles will be rebuilt, 11 used in place in the enlarged system, and the remainder retired.

Iver Henjum is president of the Garretson cooperative.

Excises to the State?

The federal government now taxes monthly telephone bills—exchange rates that is—at a flat 10 per cent. It also taxes long distance toll calls—both interstate and intrastate—at a flat 10 per cent. The telephone industry has for several years been attempting to have these taxes removed entirely, or curtailed.

Recently there has been discussion of a change in taxing policy as between the federal and state government. If this change were ever to take place it might make it difficult to get rid of the tax on the monthly bill.

The Secretary of the Treasury has included telephone excise taxes for study along with a series of other forms of taxes which might be transferred to the states. The new treasury secretary, Robert B. Anderson, recommended such a study for transferring to various state governments seven specific sources of federal taxation. The suggestion came last week as the task force of state and national officials began consideration of a redivision of functions now carried on by the federal government. The task force includes six governors and two members of the present cabinet, in addition to Anderson.

The seven tax sources which the task force will consider for use by the

(Please turn to page 56)

Frank E. Huettner is shown demonstrating the school-to-home telephone system at a recent convention of educators. In the background, Mrs. G. Irene Apelquist, president of the Minneapolis chapter of the International Council for Exceptional Children is helping Mr. Huettner show how the equipment works. Mr. Huettner addressed the 1957 annual convention of the Wisconsin State Telephone Association.

School by Telephone

an aid to the handicapped

By FRANK E. HUETTNER

[EDITOR'S NOTE: Mr. Huettner, an attorney of Cadott, Wis., was permanently crippled at the age of 14 in an automobile accident. He nevertheless completed college and law school through the use of the school-to-home telephone system, and practices law today from a wheel chair. In this article, Mr. Huettner, who earned membership in Phi Beta Kappa and in the Order of the Coif, law honor society, describes an educational technique which was used in his effort to live as full and normal a life as possible.]

IT IS DIFFICULT to describe the feelings of a 14-year-old boy when he learns that, as a result of an automobile accident, he will never walk again. I have been through that experience, but to elaborate upon it here would serve no useful purpose. It may be of some value to others, however, if I tell how I was helped by the telephone industry to overcome this handicap and to build a successful career in spite of it.

When I was injured on Jan. 17, 1942, I was left completely paralyzed from the waist down as a result of damage to the spinal cord. Moreover, since the injury was in the cervical area of the spine, my hands and arms were also affected. It was clear that I would be confined to bed for a long time and would never be able to move around without a wheel chair. I did manage to finish high school, however, through the use of text books and home study aids, such as work books, etc., provided by the school.

My parents and I were deeply concerned over the prospect of being forced to discontinue my education, upon graduation from high school, when we were shown a magazine article about the school-to-home telephone for shut-in students.

That article clearly marked a turning point for me, since it initiated me into an adventure in education which culminated in my graduation from the University of Wisconsin Schools of Business Administration and of Law and my embarkation upon a most rewarding professional career.

The magazine article, based on the experience of the Iowa Department of Public Instruction, explained that the school-to-home telephone consists of two instruments, one of which is located in the home of the handicapped student and the other in the classroom. These two units are connected through the local telephone exchange.

The set in the student's home has a directional microphone which picks up only voices spoken directly into it. The other set has a non-directional microphone which enables the instrument to pick up any sound in the classroom. It is portable, and may be carried from one classroom to another.

We immediately felt that this method would be of great value to me, but it was not easy to arrange for it. Our first problem was locating the necessary equipment, which at that time was in the experimental stage, with only a few sets commercially available in the entire country. This was finally obtained from Executone, Inc., 415 Lexington Ave., New York City, which develops and manufactures the equipment.

It was far more difficult, however, to persuade Wisconsin State College at Eau Claire to permit the use of this equipment. They had to be convinced that the technique would work, and they wanted some assurance that a student with my severe handicap would be able to make use of the education and training provided. The value of the technique was demonstrated by the favorable experience of the Iowa Department of Public Instruction. An evaluation of my ability to profit by the education was offered by R. M. DeWitt, my high school principal.

I enrolled at Wisconsin State College in the fall of 1944 as the first person anywhere to use school-to-home telephone instruction at the college level. I maintained a full college schedule of five courses and continued my studies there by telephone for two years.

Although my courses were primarily pre-commerce and pre-law, I took a number of mathematics courses, including college algebra, trigonometry, analytical geometry, differential calculus, integral calculus, and differential equations.

I particularly mention these subjects, since they were originally considered unsuitable for school-to-home telephone instruction because of the large amount of blackboard work involved. The opportunity to hear the voices of the professors and students, and to speak directly into the classroom to ask questions and receive answers, enabled me to maintain an "A" average at Wisconsin State College.

When I applied for admission at the School of Business Administration at the University of Wisconsin, I once again encountered hesitation and uncertainty. The university finally agreed, however, and the school-to-home facilities were to be installed when I moved to Madison, Wis., from Eau Claire.

In 1948, I enrolled in the law school while continuing my enrollment in the School of Business Administration, so that certain courses might be credited toward both degrees. I was granted the degree of Bachelor of Business Administration in 1949, and the degree of Bachelor of Laws in 1951.

Since my graduation, I have been engaged in the active practice of law and have tried approximately 240 cases, specializing in personal injury and other tort litigation. I am still confined to a wheel chair and have only a limited use of my arms and hands, but I have found it possible to build a career which has made me self-reliant in a way that I would never have thought possible just a few years ago.

Today, as I look back on my experience since the accident, I feel that it would be impossible to overstate the importance of the school-to-home telephone hook-up. At a cost of about $15 per month, borne by the Wisconsin Department of Vocational and Adult Rehabilitation, the telephone industry has effected the conversion of a helpless, disabled person into an independent, self-supporting citizen.

Perhaps the results in my case are greater than might be anticipated on the average, but I want to stress one thing: Even if my training had not led to an interesting and productive career, the opportunity to participate in regularly scheduled classes with other students means the whole world to the boy or girl, man or woman who is shut off from most aspects of normal life.

Educators, I am told, are primarily concerned with the problem of making a student's training the sort that will be useful to him in later life. In my case, however, this never seemed a problem at all, for no one seriously imagined that I would be able to live much more than a few years. Yet I would venture to say that, even if an early death had prevented my making any use of the education afforded, the experience nevertheless would have been worthwhile, for it gave a content and meaning to my life which were completely lacking before without it.

When the school-to-home unit was originally installed in my bedroom, at Eau Claire by the Wisconsin Telephone Co., I did not anticipate how far it would help me to go. But from the first few days, it gave me a renewed desire to accomplish something, a feeling that I was no longer as dependent as I had been and a knowledge that I was participating with others in the class just as if I were actually there in person.

I cannot begin to express how much I owe to the school-to-home service, to Executone and to the telephone companies that provided it. In the hope that knowledge of this method may become more widespread in the telephone industry and lead many telephone companies to voluntarily offer the service, I am writing this article outlining my experiences with it. In the same hope, I am serving on the Advisory Committee of Executone, Inc., sponsors of the system, which includes some 25 authorities on the education of the handicapped who are enthusiastic supporters of this project.

I am proud that the schools and telephone companies in my own state of Wisconsin have been pioneers in this work and that state-aid funds are available to help finance it. With the improved equipment in use today, remarkable things are being done.

In Fond du Lac, a bedridden polio victim has taken part in junior high school classes, and has even played a role in a school play. In Oshkosh, five children are "going to school" via the telephone.

Hazel Green, a polio victim who received her education by use of the school-to-home telephone was salutatorian at her high school graduation.

Other successful uses of this technique have been recorded in many Wisconsin communities, including Appleton, Berlin, Burlington, Elkhorn, Ellsworth, Green Bay, Horicon, Janesville, Madison, Manitowoc, Milwaukee, Nekoosa, New Richmond, New London, Shorewood, Stevens Point, Viroqua, Watertown, Walworth and Wauwatosa.

I understand that telephone companies in 46 other states, Alaska and Hawaii are cooperating with local school authorities in making the school-to-home telephone system available to unfortunate school children in their communities. This steady growth is a

(Please turn to page 58)

The Public and Dial Conversions

When an exchange "goes dial," something must be done to insure retention of personal contact with the customers.

By MARVIN DIEFENDORF*

LET ME ASK you a question: Have any of you, as telephone company owners and managers, ever sat down and seriously considered just how much of a "change" you are going to force upon the customer when you convert one of your exchanges to automatic operation? Most often, we think only of our side of the problem, and it usually is a problem for the company, or why else would it consider making the change. It is either that we can't find and train operators fast enough, or the switchboard capacity has been reached, or the present building is too small and can't be expanded on the property, or the wire center has changed, or numerous other situations that cause management to decide to convert to dial.

Of course, one of those "other" problems could be that a large segment of the town's population is insisting that you give dial service. Even though this be the case, you are still going to force a considerable change upon the customer when you do finally "pull the picks."

It means, for instance, that all of a sudden the customer no longer has the "friendly voice" to greet him when he lifts the receiver. Instead, he must begin looking up dial telephone numbers and remember access codes and get used to strange buzzes and rings, and well,—let's face it, sometimes no sound at all. Things like this could never have happened in the "good old days" when "Myrtle" was on the board.

Yes—dial service is fast, and it is always ready to respond to the customers' commands, but there are some who will tell you that it does not furnish all the services that the old manual systems did. Such is progress, and no man and no industry can hold it back for long.

Big Step For All

The coming of dial service is a big and important step for every community and the serving telephone company as well. Very often, it signifies the end of many knotty problems for the company, as well as for the customer. It means that his service becomes as modern as science and engineering can make it. Then, too, dial conversions these days are usually planned in accordance with the Direct Distance Dialing (DDD) plan, which will eventually place a multi-billion dollar, continent-wide robot virtually at the finger tips of every customer. Certainly, this is progress.

MARVIN DIEFENDORF

Since a dial conversion is a *big* change for both parties, I believe telephone companies should treat it as such, and begin very early to educate the public regarding the use of the dial and the effect such service may have on certain customers—particularly business customers.

We should not wait for the customer to start asking us when dial service will be installed. When management has made the decision to convert, I believe it should be announced —and in a big way. Of course, it goes without saying, that when the announcement is made it will constitute a commitment to the public. This commitment should not be made unless you are sure that the conversion date can be met. When a commitment is made, *it must be kept.* Company public relations hang in the balance. As I mentioned, the conversion date should be announced in a big way—even if the date is a couple of years in the future. Maybe that is all the more reason to announce it big, to be sure the customers understand. I would suggest that the announcement be made at a luncheon or some other special gathering to which the chamber of commerce members and other local community leaders are invited. A prepared statement for the newspapers would also be very appropriate—but remember, I said a *prepared* statement. You had better write it out yourself, and be sure you are not misquoted.

Tell Conversion Date

If the date of the conversion is a year or two hence, then mark your calendar and make definite plans to advise the community regarding the progress being made. Remind them that the dial is coming, and tell them

*Mr. Diefendorf is Public Relations Director of General Telephone Co. of Indiana. He presented this address before the recent convention of the Indiana Telephone Association.

what you are doing to hasten that in-service date, if this is possible. I believe that if you do a good job of keeping the public informed, the commercial office personnel will find they are not bothered so much by dissatisfied customers wanting to know when they are going to get dial service. Now some of you might ask—"How should we go about the job of keeping our customers advised of our progress on the dial conversion program?"

Actually, there are many ways that this can be accomplished. The most important point to remember is that local conditions and situations should always govern your action. What I have to say about this particular phase of the program might apply in the majority of cases, but certainly not in all.

The best way to tell your story to the greatest number of people is, of course, by using the medium that attracts the most attention of the audience or public that you wish to reach. Today, we have several media: Radio, television, newspaper and direct mail advertising.

Television has now invaded practically every home across the nation—but how many smaller towns have their own television station? Radio certainly has a great audience too, but, again, how many small towns have their own radio station?

Direct Mail Good

Don't let the lack of these mediums discourage you, however, because actually TV and radio might not be the best method of keeping your public advised.

Until recently, most small towns throughout the breadth and length of this land could be justly proud of their own home town newspaper. With rising costs and competition from larger neighboring cities, however, many small papers have found it necessary to cease publication. The people are still reading newspapers just the same, but thanks to modern transportation, people in a small town, 100 miles or more out, are reading the same paper at the breakfast table as the folks in the neighboring metropolis. Trying to tell your local story in the newspaper under such conditions would almost be impossible. Column inch advertising rates would also be prohibitive.

For companies located in towns having no local newspapers there is still one medium left—Direct Planned Advertising. I have developed this phase of the program in this manner because I wanted to show by process of elimination that there always is the direct planned advertising method to accomplish the job of keeping customers informed.

Use Big Pictures

My own experience in this field has proved on every occasion, that direct advertising has been one of the cheapest and most beneficial tools we can employ. Sometimes the per unit cost rises slightly, but results are usually well worth the additional expense. It would be my suggestion that you seek out some local printer or advertising man and plan a simple single page or folded pamphlet for direct mailing to your customers. Get out your calendar and plan to send one at regular intervals or whenever you have just completed a major portion of the dial conversion project, such as raising a new building or the arrival of the new equipment, etc. And, remember too—use pictures, big pictures. Due to the complexity of operations and machines, the old adage is more true today than it ever was before—"A picture is worth a thousand words."

If all of this is done, then your employes should have more time to spend on the offensive rather than the defensive side of the line, and, therefore, be able to engage in an active sales campaign, which has been found most successful and lucrative just prior to dial conversion.

I would like to quote the following from a newspaper article, which is typical of many that pass over my desk each week:

"The West Alexandria dial telephone system was officially inaugurated at 7:30 a.m. Thursday, when all of the subscriber lines were cut out of service at the old manual office and the telephone cables and lines were placed in service at the company's new community dial central office building on North Main Street.

"The change to dial service which took place today brings to West Alexandria the most modern type of service available and marks the end of a manually operated telephone system which has been the mode of telephone communications in the community for over 60 years. According to Mr. Kimball, western division manager of the company, acceptance and approval of the new service is quite general throughout the West Alexandria exchange. This is evidenced by the interest shown in the recent dial instruction demonstrations and the orders for new service that have been received. Nine hundred seventy telephones were placed in service on the dial system this morning. This represents an increase of twenty per cent, or one hundred sixty telephones, over these which were served through the manual exchange."

Sells New Business

I believe this article very clearly points out another very important advantage to the company planning a dial conversion. You are going to increase the *value* of the service to the customer, consequently, he is usually willing to not only *pay more* for it, but also, take more of it. In most every instance, operating companies have found that at the time of conversion, they add several new customers and many extensions to the existing services.

These new customers and requests for additional services may come to you as a result of some of the advertising you might be doing along the lines of keeping the community advised of progress on the dial conversion project, but I *would not* suggest a *planned* program of mixing sales with the educational program.

If the education program is accomplishing its purpose, be satisfied. At least your commercial people, plant installers, combination men and other sales personnel will not be required to defend the company on the dial situation when sent to complete a service order, or when meeting the public in your offices and on the street. Employees should then be able to spend all of their time and energy on completing their assignments and also pursuing positive sales opportunities.

At this point, let's assume that all has gone well with your planned dial conversion program. The building is up, the equipment installed, tested and operating perfectly. All cable and wire leads have been put in good order, and the customers' instruments installed and ready to go to work for them. All that's left to be done is to "pull the picks," and then walk out and close the door behind you. I would again like to remind you that this whole thing, which by now is very "old hat" to you, is still going to be a big change for the customer.

Inspection Important

You are all familiar with "open house" programs, so I won't go into that subject, but I will simply say that if you convert your exchange and neglect to invite the local city government, community leaders and the townspeople en masse to attend some sort of a commemorative program, you are going to pass up one of the finest opportunities to bolster your public relations in that community. It does not have to be an elaborate undertaking. A widely publicized, sincere and cordial invitation is all that is required. The few dollars you will spend for employe overtime hours, etc., will buy more community good-will than practically anything else you can do.

Well, the conversion is over; the "open house" was a wonderful success.

(Please turn to page 58)

XUM

The square wave generator can be easily connected to a protector frame shoe for line measurements. (Photo by Louis Landman.)

Square Wave Testing

By HAROLD B. McKAY

TELEPHONY's Electronics Editor

Part 2

IN ORDER to determine if modern electronic techniques such as square wave testing can be adapted to telephone work, a square wave generator was obtained from the Heath Co. This was used on various pieces of telephone plant in conjunction with the Hickok Model 770 oscilloscope used in the previous tests described in these articles.

Last week's article described the construction and generation of the square wave. It was shown that the straighter and steeper the vertical line of a square wave, the better is the high frequency response of the circuit being tested.

The straightness and flatness of the horizontal part of the square wave is a measure of the fidelity of the low frequency response.

Fig. 2 (A to G) which was taken from the instruction manual furnished with the Heathkit SQ-1 square wave generator, shows some of the various forms of distortion which can occur when a square wave is handled imperfectly by a circuit. (See page 24.)

These are basic drawings, and should be kept for reference and study. A comprehension of the underlying causes of these figures will go a long way in enabling the technician to analyze new forms when he sees them.

Fig. 2-A shows that higher frequencies are being passed better than low frequencies. The sharp peak of the vertical line is characteristic of conditions which boost high frequencies more than the lows.

A second proof of this situation is seen in the sloping lines between the verticals. These would be horizontal and flat if lows were being transmitted with fidelity equal to the highs.

Fig. 2-B shows what happens when high frequencies are cut off. Here the vertical line fails to rise to a sharp square corner. This rounding off is characteristic of loss of high frequencies. Note that the horizontal line is straight and flat, showing good low frequency response.

Fig. 2-C is an example of a condition where low frequencies are being boosted *less* than the highs but yet the highs themselves are being passed OK. Because the middle part of the square wave is made up of low frequencies, the middle of the wave will sag if the lows are being lost or attenuated.

Fig. 2-D is the opposite condition to C. Here the lows are being boosted more than the highs, so an upward bulge results.

Fig. 2-E shows a condition which can occur in items of telephone plant. It is caused by a resonant circuit being present in the apparatus being tested.

What happens is that the sudden voltage rise of the square wave, shock excites some combination of inductive-capacitive or resistive-capacitive elements in the circuit into oscillation.

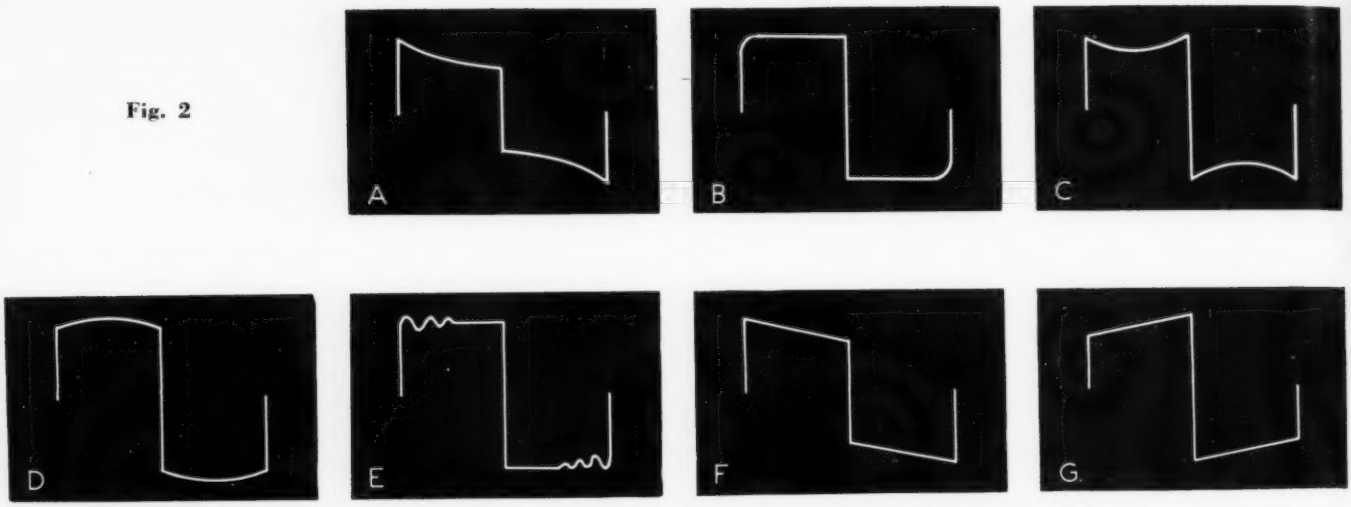
The oscillations gradually die out until shocked into action again on the next cycle. This configuration is called a damped oscillation or wave train by some. Others call it "ringing."

Electrically it is the equivalent to the mechanical vibration which occurs when anything—be it cymbal or jews-harp—is struck a blow. For this reason this writer likes to think of it as a "boing-boing" curve.

Cable Pairs

In telephone work, this curve was observed to result when square waves

Fig. 2



Distortion of square wave shapes showing A—excessive high frequency response; B—loss of some high frequencies; C—loss of low frequencies; D—low frequencies amplified more than highs; E—oscillations in resonant circuit; F—Low Frequency phase lead; G—Low Frequency phase lag. (Drawings by Victor Willard from Heath Co. originals.)

were sent over loaded cable pairs. Evidently the resonance point was reached when the loading coil, the cable resistance and capacity reacted together to sustain oscillations.

Although it seemed of little import at the time, it should be noted that the frequency of such resonance can be determined simply. If the number of oscillations in such a wave are counted and then compared to the fundamental frequency at which the square wave is being generated, the frequency of the oscillating elements can be determined.

Another place where this type of wave results is in the testing of carrier filters. This is because certain of the coils and condensers in the filter assembly can form a resonant circuit which will oscillate when struck by the impact of a square wave.

This condition seems normal and does not interfere with speech transmission. However, it can cause serious trouble on pairs and equipment being used for video transmission.

The foregoing examples of wave shapes are based upon conditions where everything is in correct phase relationship. In actual practice, many troubles result because things are not in phase.

The power engineer is disturbed by "power factor," the radio man has his "standing wave ratio," the telephone man talks about "return loss." All of these troubles have to do with things that are out of phase.

Probably a great deal remains to be done in the telephone field in this matter, but the square wave will tell some things about phase relationships.

Figs. 2-F and 2-G are examples of this. F is a case of phase lead at the low frequencies and G is a case of phase lag.

Telephone Testing

The square wave generator may be used in telephone work for the same purposes as it is used in radio—that of testing the frequency response of different circuits and components. Thus, this method will tell what degree of fidelity can be obtained from the apparatus. This has an advantage over single frequency transmission testing, such as simple loss measurements at 1,000 cycles. One measure of how easy it is to hear over a telephone line is how natural the voice sounds.

There are no set rules for using square waves. Some feel that the fundamental frequency to which the generator should be set must be about 1/100th of the top frequency which the system will handle. This may be all right in television or broadband high fidelity audio systems. However, most telephone transmission systems will not handle frequencies over a 100 to 1 ratio.

Another rough rule of thumb is that the fundamental of the square wave generator should be about three or four times greater than the lowest frequency that the system under test will handle. This means the lowest frequency that will go through the system, say with a 3 db loss, not the rated low frequency point of no loss.

Repeat Coil

In making tests for this article, different fundamentals were tried. Using a toll grade repeat coil, a fundamental of from 100 to 200 cycles produced good results. The circuit in which this coil is used would be expected to pass perhaps 150 to 3,500 cycles with a "flat" response curve.

Actually it will handle a greater range, as the square wave generator showed. At low fundamental frequencies, such as 50 cycles, the curves on the Hickok oscilloscope showed some overshoot on the vertical lines such as shown in *Fig 2-A*. This meant that the high frequency response was excessive—that is much better than a low frequency of 50 cycles. This was to be expected because the coil was not designed to pass low frequencies.

When the Health square wave generator was set at 200 cycles, a better picture resulted, and a good square wave was seen. A lower grade of coil, which did have toll grade of high frequency response would give a picture like that of *Fig. 2-B*.

This points up the fact that, in analyzing a square wave, certain points must be firmly established before evaluating results. When thinking of high or low frequency response you must always ask yourself the question: "High and low in respect to what?"

In square wave testing of telephone apparatus, a fundamental frequency somewhere near the lower edge of the expected transmission band should be used. In the case given above, if 150 cycles is used, then the high and low frequencies affecting the shape of the square wave may be expected to just about cover the total range of the apparatus if it is in the telephone voice brackets of 100 to 3,500 cycles.

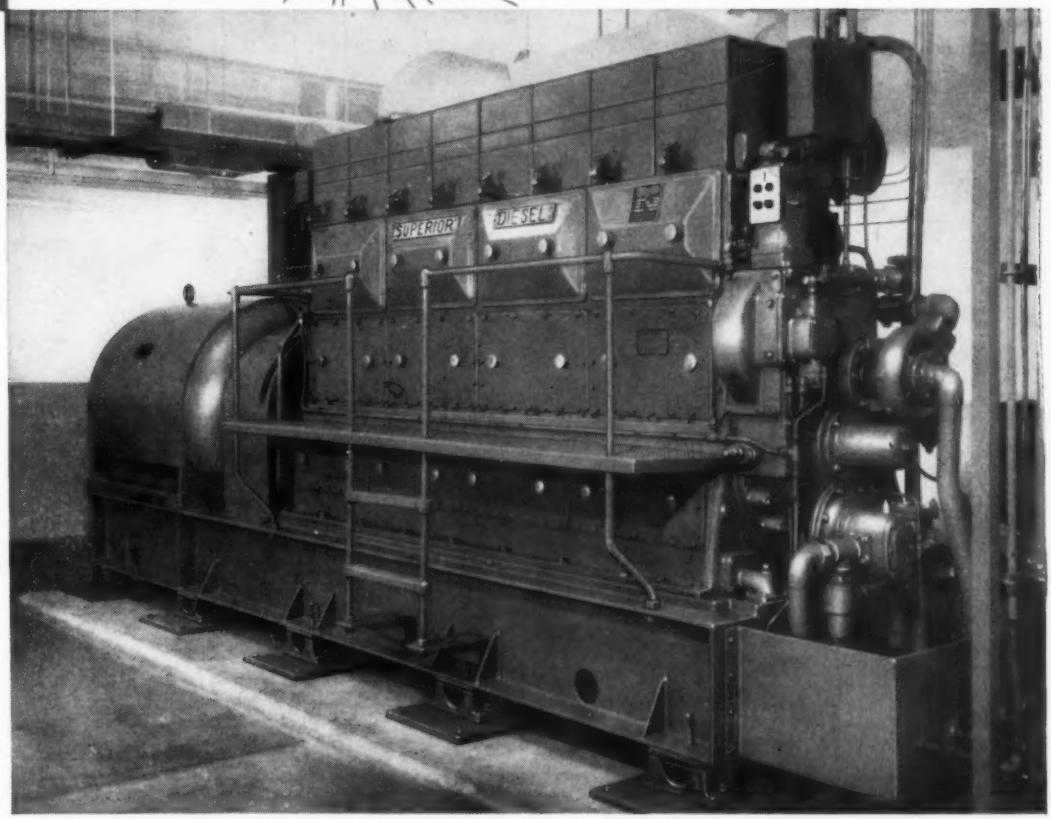
This is cutting it kind of close for square wave testing, which shows up to best advantage over a wider spread. However, results which tell a story can still be obtained by comparing the picture obtained to traces showing known conditions. It is a small matter to make allowances for the fact that telephone apparatus has natural limitations which are not encountered in radio.

(To Be Continued)

XUM

Mid-west telephone company

Dials D for DEPENDABLE DIESEL



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White Diesel

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Beating the Paper Work Jinx

By William J. Milford

USELESS PAPER WORK costs the nation some 40 million dollars a year, Ben S. Graham, methods research director of the Standard Register Co., Dayton, O., told a recent Denver, Col., gathering. He pointed to this tremendous waste as increasing costs everywhere, complicating the operation of every business and attaining nothing in the process.

Other experts have also viewed this situation as one of the greatest wastes in business today. It is no stranger to telephone company executives around the country, and unfortunately often exists in offices whose executives are very much unaware that such waste is present.

Foremost cause of the useless paper work jinx is the presence of old routines with which everyone has become so familiar as to no longer question their justification. In many cases such routines have been going on for years and their original usefulness has long ago been outgrown by more modern methods. But, because they have been a part of our business lives for lo, those many years, we accept them as necessary.

"Why it's always been done—it's an established procedure with this firm," was the most common answer research people received when pointing to one such old and very useless routine. Executives of the company just could not believe it no longer had value.

Certain paper work functions can be entirely eliminated, while others can be reduced and still serve a useful purpose. The reduction in the time factor, in these days of high clerical labor costs, makes a sizable savings in the departmental budget.

In addition to record keeping whose value is solely for the moment, many companies extend the error by filing and recording when little practical purpose is served by so doing. The latter costs money too, and just as much as the creation of the records themselves. Where no permanent value exists in any given paper work, there is little justification in spending additional company funds to make them permanent records. After serving the purpose, they can well be destroyed if they have no additional real value.

Experts point out that we should examine every paper work routine as to its only useful purpose: to transmit information to help someone to do a better job. If every routine, so examined, cannot stand up under this challenge, then it should be placed under the closest study to justify its future existence.

Many paper procedures are strictly traditional and provide nothing toward control in the business generally. There was a time when a business could perhaps indulge in unnecessary routines, but not today when costs in some offices are as much as five times what they were 15 and 20 years ago.

After review, it may be found that much of your paper work is not justified except from a tax record standpoint, and we are told that many of these records are not as necessary today as they were first thought to be.

Another criterion by which to judge office detail is whether the procedure actually shows when things get out of line. This is the test of true control which is, of course, a vital part of business procedure.

Several experts are recommending that dollar accounting be adopted in modern business (i.e., dropping pennies from the records), to obtain greater efficiency at less cost in some areas of paper work routines. It may be worth while to study this possibility also.

Paper work which is concerned chiefly with keeping petty detailed records should also be put under the closest scrutiny. Much of this could be eliminated and actually provide sizable savings—particularly in the larger organizations. For example, work involved with records of pencils, paper clips, etc. actually, we are told, costs more than the materials themselves.

Studying each routine will reveal many areas where shortening the amount of detail or consolidation of two or more routines into a single record keeping procedure may be possible. If we can cut down by half the clerical cost of any paper work, this is a saving not to be overlooked.

"Is this record really necessary?" should be a motto hung over every executive's desk today. If it enables him to catch just one such useless work routine in a week, it will be as valuable to the company as any other cost saving idea that may be developed.

We need such checking devices to keep us alert to possibilities for uncovering useless work. Without them, busy as we are in any day, it is easy to go on in the usual pattern because of the scores of other pressures constantly before us. A very large percentage of that 40-million-dollar waste Mr. Graham mentioned exists simply because business executives never review the work that passes across their desks with this thought in mind.

There is another modern business aid —the host of new record keeping systems and business machines which have been developed recently to make record keeping easier, quicker and less expensive. Some of these represent sizable investments but the initial cost is often quickly repaid through the savings obtained.

There is a common misconception that these are only for the very large organizations. Such systems and machines have also been designed for use in the smallest office and at reasonable costs.

TELEPHONY'S Therapeutic Value

A new use for old copies of TELEPHONY was described recently by Guilford Erdman, of Albuquerque, N. M., in a letter to this magazine. Mr. Erdman thought his idea worth-while enough that—but let's let him tell it (in the words of his letter):

"Please find enclosed check to cover a two-year renewal of TELEPHONY.

"I am no longer connected with the telephone industry but would like to have the magazine mailed to the following address:

"Mr. Larry McCahon
Chief, Manual Arts Therapy
Veterans Hospital
Albuquerque, New Mexico

"I have been giving my copies to the hospital and Mr. McCahon tells me that the bed patients certainly get a lot of good out of reading them."

ACME VISIBLE

FLEXOLINE

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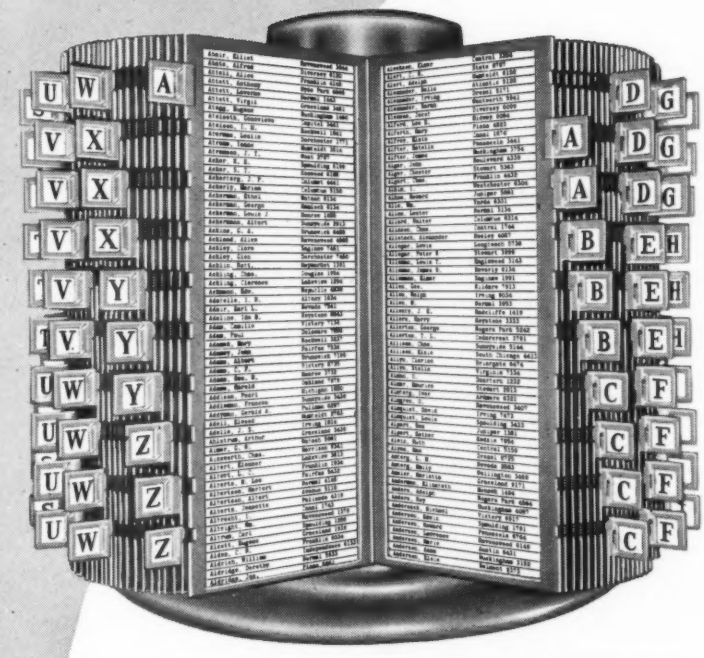
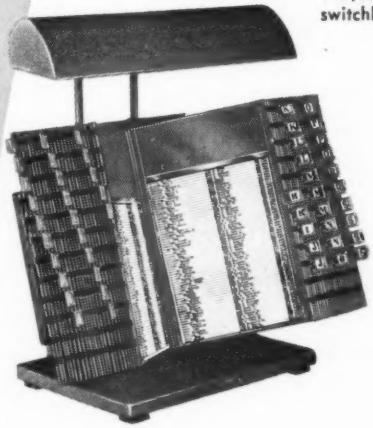
Speed up your central information switchboard records by making *all* of your telephone listings conveniently available to every information operator.

Through the use of Acme FLEXOLINE Equipment, telephone companies have been able to render an improved service at lower cost, speed up service and cut many corners in operation. The ease with which new names or listings are inserted in their correct places helps to keep lists always up to date, in many cases within a few minutes after the change has been completed.

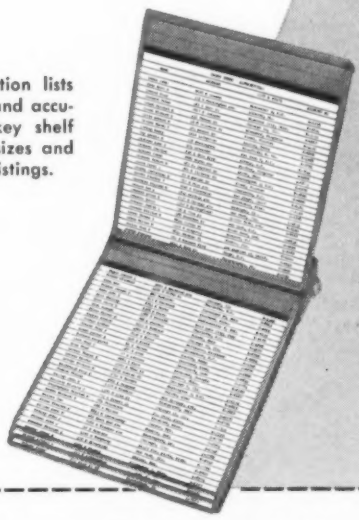
Regardless of the type of switchboard you use or the number of subscribers you have, there is an Acme Time-Saving FLEXOLINE modern, hi-speed reference unit that will exactly meet your individual purpose.



Revolving stands provide compactness and great capacity . . . in single or double tier units they hold from 7,000 to 147,600 listings. May be used on desk, switchboard or mounted on pedestals.



Desk stands, individual units with up to 32,800 listings capacity or in banks of a number of stands, for greater capacity.



Insite Index for small information lists or any other list where speed and accuracy are essential. Used on key shelf or desk. In a wide range of sizes and capacities from 350 to 2,500 listings.

Acme Visible Equipment has been designed for telephone use by Acme Systems Engineers in close cooperation with practical, experienced telephone experts. Tell us your requirements and receive our suggestions and quotations.

MAIL COUPON NOW!

ACME VISIBLE RECORDS, INC. Telephone System Division, Crozet, Virginia

T8-24-57

Please send us illustrated booklet

☐ #1088 on Acme Switchboard Keyshelf Units ☐ #975 on Acme Flexoline

☐ Have representative call. Date_____ Time_____

☐ We are interested in Acme Visible equipment for_____ (KIND OF RECORD) records.

COMPANY_____ ATTENTION_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

DEPARTMENT OF TECHNOLOGY
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XUM

THE Operator's Corner

By MAYME WORKMAN — TRAFFIC EDITOR

ARE WOMEN IN INDUSTRY to stay? The writer would say, "Most emphatically." Women in the last 50 years have proved by going out and earning that they have a right to a working career. However, women of mature years who try to enter the labor market for the first time, or to re-enter it after an absence, often are rebuffed.

What stands between the mature woman and the unfilled job? There are a number of things, among them a misunderstanding by the public, industry, and the job applicant herself, of just one word: "old."

Today, an infant female has a life expectancy of 71½ years. At the age of 65, a woman's life expectancy is 17 more years. Woman's life span was 51 years in 1900. The retirement age of 65 was based on the life expectancy figures of that year.

To the gift of long life, medical science has added the blessing of health in later years. Six out of seven of those aged 65 are not disabled, and their mortality rate has dropped at least 40 per cent since 1940. To keep healthy in later years, geriatrics experts advocate work in some form, for they have found that idleness can be as fatal as disease to healthy, mature persons.

For many a woman this work must be paid for. To support her in the years added to her life, she can look forward only to the old age and survivors' insurance benefits. Many telephone employes, fortunately, also have pensions and other benefits provided by their companies which help to make their leisure years happy and comfortable ones. These benefits should not be taken lightly, for in most instances they are provided with little or no cost to the employes.

Census figures indicate 1,500,000, or about one fifth of the women 65 and older, have no regular income.

According to the late Dr. Martin Gumpert, a physician who specialized in geriatrics, at 65 a person is biologically as efficient as the average 50 year old was, a generation ago.

Studies by the United States Labor Department and others have disclosed that, in contrast to the young workers, the older worker produces as much, if not more (the slowness of some mature workers is offset by their steadiness). Moreover, the quickness of young workers is frequently offset by their tendency to work in spurts, followed by slumps; the older worker's attendance record is better, and they remain on the job longer.

While the older worker usually learns more slowly, the older worker perhaps also learns more thoroughly. According to a Cleveland welfare federation study, the woman worker over 35 has maturity of judgment (which along with wisdom only age can bring), excellent job attitudes, and the ability to meet and handle people. The older worker was found to be loyal, efficient, conscientious, dependable, patient, and accurate.

In the telephone industry, we need both the young and the mature worker to handle the type of service we render. Handling telephone calls is essentially a woman's job, which was proved many years ago shortly after the telephone was invented.

One industry cannot change the modern trend relating to employment or retention of older employes. To be convinced that women are living longer and more zestfully, just take a look at the grandmothers of today. Hear them on television and the radio. Observe them as they gather for a social function, such as the one that is held at the Conrad Hilton Hotel in Chicago at the same time the United States Independent Telephone Association is having its annual convention.

The grandmothers we see in passing through the hotel corridors are vivacious, charming, youthful looking, well groomed and, most important of all, they are enjoying life. I am confident they would resent any intimation they are ready to be placed "on the shelf."

Due to the increased life span, it seems industry as a whole might well review the question of age, and what is old or vice versa, to permit those who wish to do so work beyond the present 65 age limit. Many problems would have to be resolved, a major one of which would be the high cost of maintaining pension plans, involving older workers.

The most depressing experience is to visit a home for the aged, or a convalescent home where it seems oldsters are just sitting and waiting for the Grim Reaper. Many of these folks could be actively engaged in work of some nature, which would keep them interested and would give them a feeling of being needed and useful, which would be a boon to them, mentally and physically.

Traffic Questions

(1) What class of calls are handled on the Official Board?

(2) Should operators at Telephone Company Official Switchboards be models of PBX usage?

(3) Mention some of the features of particular importance in handling calls at an Official Board.

(4) How should an incoming call be answered at an Official Board?

(5) On an Official Board Call, if the customer indicates clearly the line to which the call is to be directed, how should the operator proceed?

Answers are printed on page 60.

Incentives and Motives

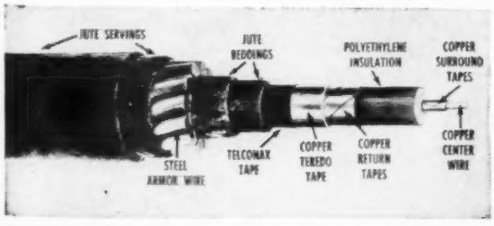
"Another essential is to watch incentives carefully. As exceptional men emerge, the rewards they receive and the challenges and opportunities they see ahead must be such as to keep them wanting to grow. If we level out rewards, we'll level out motives and abilities, too; and I mean level them down." —CLEO F. CRAIG, *chairman of the board, American Telephone & Telegraph Co.*

Cable leaving ship's stern must withstand the rigors of installation and give long, efficient service. BAKELITE polyethylene plays a vital role in meeting these requirements. American portion of Trans Atlantic Cable supplied by **Simplex Wire and Cable Co.**, Cambridge, Mass.

How BAKELITE Polyethylene serves . . .

On the bottom of the Atlantic Ocean

The electrical and physical properties combined in BAKELITE Brand Polyethylene Compound DFD-6505 make it especially useful for service in submarine cable. Its insulation values are excellent and its rate of moisture absorption extremely low. Physical properties, such as light weight, flexibility and resistance to cracking at low temperatures, further equip it for the rigorous installation and operational requirements imposed by the undersea environment.



Cutaway photo shows complex structure of this cable.

These are some of the reasons why Bakelite Polyethylene DFD-6505 is being used for the inner insulation of the American segment of the North Atlantic telephone line and the Alaskan cable, reaching 1600 miles between the state of Washington and Alaska. Since 1950, over 4,000 miles of submarine cable have been insulated with DFD-6505.

BAKELITE Brand Polyethylene and Vinyl covered wire and cable meet the demands of the telephone and communication industries. To keep informed about the latest developments, you can receive regular copies of Kabelitems and other pertinent technical data. Simply send your request to Dept. XJ-180.

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THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

IT WOULD appear that a trailer-mounted emergency power unit would prove a good investment for any company that operates several exchanges which are not all equipped with emergency gas-engine-driven generators.

While commercial power is highly reliable today, one can never be certain whether some unforeseen condition will cause its interruption in a certain area for an extended period. In such a case, the trailer-mounted generator will prove a most convenient means of providing emergency power.

The trailer-mounted generator will also prove convenient for use on various construction jobs where commercial power is not conveniently available.

•

We have a report that a new alarm system, called Phonalarm and said to be revolutionary, is being installed in 320 different locations in the Los Angeles, Cal., area.

The new system utilizes existing fire alarm circuitry. In operation, the person turning in the alarm reports actual conditions so that the proper equipment may be dispatched.

This is said to be an improvement over the old system wherein only an alarm could be turned in. It is reported, also, that the cost of each new unit is approximately $200. This cost includes installation and accessories.

•

Civil Defense officials have great plans for a signaling device, recently developed, which they hope to persuade people to install in their homes at a cost of four or five dollars.

This device, known as NEAR, will be plugged into any 60-cycle home outlet. Then, when Civil Defense officials want to warn families to turn on their radios and learn of approaching natural disaster or enemy planes, they can superimpose a 120-cycle signal over the power system. This, in turn, will cause NEAR to blink or buzz.

•

We enjoyed a letter recently from our old friend, A. D. Butts, now Independent company relations representative for Michigan Telephone Co. at Jackson, Mich.

During World War II, Mr. Butts served as a first lieutenant in the Signal Corps with the Plant Engineering Agency in Philadelphia. During a part of this time, he was a Liaison Officer for the agency in the Chicago Signal Depot, and the writer had many telephone conversations with him in connection with engineering problems and the shipment of equipment and material to various overseas theatres of operation.

•

Something new has been added to the Blain household. We have automatic lights in our clothes closets. Open the door and the light comes on. Close it and the light goes out.

This is a simple, inexpensive device that pays big dividends in satisfaction. It also prevents forgotten lights in closets that makes the meter spin!

•

New cover goggles, designed to fit over most prescription glasses, even those of higher than average temples, are now available.

The soft vinyl frame form fits any face, closing all gaps against eye hazards. A flanged nose bridge gives added protection around the nose.

Shatterproof lenses, easily replaced with special tools, are available in either methacrylate for heavy-impact protection or acetate for average protection. Regular, screen or fog-free ventilation is optional.

•

We are all familiar with the great contribution that Crapo HTL-85, HTL-135, and HTL-190 high tensile telephone wires have made to the improvement and expansion of rural telephony. Now, we have Crapo HTL-195 which combines the superior telephonic transmission qualities of HTL-135 with the extra high tensile strength of HTL-190.

This unique conductor opens up new possibilities for the construction of extra-long span, low-cost rural lines.

The new HTL-195 wire can be employed to best advantage where terrain and other conditions permit the use of extra-long spans. It is especially applicable for joint use where telephone circuits and rural power lines are to be strung on the same poles originally spaced for long span rural power lines.

It eliminates the necessity of setting an intermediate pole between power line supports to accommodate the shorter spans required for telephone wire of lesser tensile strength.

Its superior tensile strength also makes it admirably suited for river crossings and other locations requiring spans of unusual length. Spans up to 600 feet in heavy loading, 650 feet in medium loading, and 700 feet in light loading districts, are possible when this new wire is employed.

The physical and electrical characteristics of Crapo HTL-195 are:

Size B.W.G.	*No. 12*
Nominal diameter, inches	0.109
Minimum breaking strength, pounds	1800
Resistance per mile, ohms	39.8

•

An alarm system that talks for itself is now being produced out in Toledo, O. This new device makes use of both radio and magnetic tape to inform proper sources of either fire or burglary emergencies.

An overhead device is triggered to be set off by a fire as small as the flame of a lighted match. When the system is activated, the radio trans-

BICC execute Major Telecommunication Projects ANYWHERE IN THE WORLD

Consult BICC about the Planning Manufacture and Installation of Telecommunication Projects.

We have had long experience in this kind of work in many parts of the World. A few of our recent contracts are briefly described below.

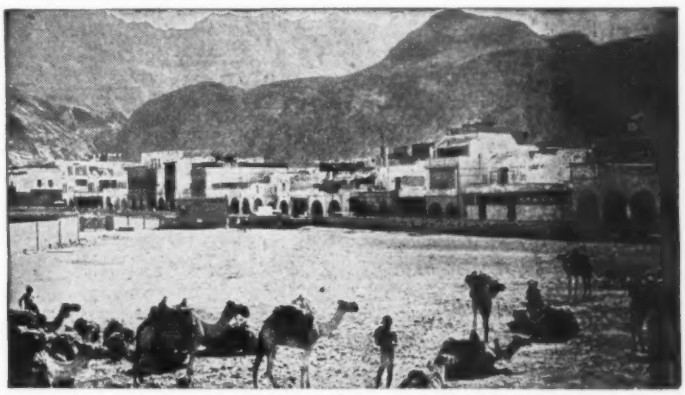
The following types of BICC Cable are in continuous manufacture for telephone administrations in many countries: coaxial and balanced pair cables for carrier working, long-distance audio cables, paper or polythene insulated exchange-area distribution cables.

We shall be pleased to give you further information from our nearest Branch Office or from our Headquarters in London.

AUSTRALIA *Electrification of the New South Wales Railway Western Line has necessitated a completely new track-side cable scheme covering the 34 miles from Sydney to Penrith. The main cable comprises 6 pairs for 24 channel carrier working and 60 audio pairs for local telephone and control purposes. Many of the audio pairs are terminated at railway stations, signal huts, power substations, etc., in order to provide local facilities. The installation was undertaken by BIC Construction Co. for the N.S.W. Railways Department, the cable being manufactured by BICC.*

NEW ZEALAND *BICC have supplied a long-distance cable between Auckland and Hamilton for the New Zealand Post and Telegraph Department. BIC Construction Co. supervised the installation and undertook the progress and transmission testing. The cable consists of 4 coaxial tubes to provide long-distance carrier or television circuits, together with a surrounding layer of 54 audio pairs for intermediate local circuits. The pairs are loaded. The cable is buried direct in the ground for most of its eighty-mile route, except when passing through towns where it is laid in ducts.*

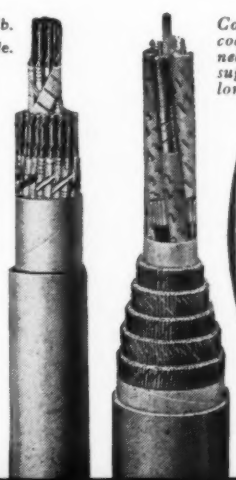
VENEZUELA *BIC Construction Co. have undertaken the jointing and supervision of installation of a 448 pair 20 lb. long-distance audio cable to improve the telephone service between Caracas and Maiquetia. With a route length of approximately seventeen miles, the cable runs wholly in ducts along the side of a newly-constructed auto-road linking the capital town of Caracas with the coast. This contract has been undertaken for the Compania Anonima Nacional Telefonos de Venezuela, the cable being manufactured by BICC.*



ADEN *To extend existing facilities and to cater for the Colony's growth, a new distribution network has been installed comprising approximately 44 miles of BICC cables specially protected against soil corrosion.*
The new network provides an increase of 3,000 lines and consists of paper-insulated local distribution cables ranging from 15 to 200 pairs, the larger sizes being of the unit twin type. A short balanced and loaded audio cable was also installed to link the Town with the new refinery site at Little Aden. This contract was undertaken for the Aden Posts and Telegraph Department.

Left: a BICC jointer at work on a coaxial cable, cutting the tubes ready for jointing. Two typical cables for carrier working are illustrated on right.

BICC manufacture every type of telecommunication cable and undertake their installation — anywhere.



24 channel 24 pair 40 lb. carrier telephone cable.

Composite cable with 4 coaxial tubes for 960-channel or television, with 18 supervisory pairs and 390 long-distance audio pairs.

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BRITISH INSULATED CALLENDER'S CABLES LIMITED
21, Bloomsbury Street, London, W.C.1, England

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mitter broadcasts a prerecorded magnetic tape. Radio receivers are located at fire headquarters or police stations for burglar alarm hookups.

The magnetic tape gives the information as to the source of broadcast, location and fire box number. This message is repeated three times at 40 second intervals and recorded on magnetic tape at the receiving end for further reference.

This device may be used in a similar manner when it is connected with a burglar alarm system and pertinent information is broadcast to police headquarters. This system is arranged to switch automatically to a dry cell battery source of power in the event of power failures.

FCC has granted a "citizen's license" to owners of such systems.

•

A new floor preservative, recently placed on the market, is designed for use on old or new concrete, terrazzo and wood surfaces.

It is claimed that concrete and terrazzo floors are rendered permanently non-dusting from one application; furthermore, that surface film will not wear away due to the fact that a stratum of synthetic resins becomes a part of the floor as it penetrates. As it solidifies, it fills and seals the pores against the entrance of moisture.

•

A chain hoist of a new compact design weighs only 5¾ pounds for the ¼-ton and 11¾ pounds for the ½-ton capacity.

Lifting, lowering and dragging operations can be performed by this hoist. There is a ratchet head in the operating handle and a friction holding brake. The handle operates in any position.

The tubular handle begins to bend when the hoist is overloaded and breaks at 60 per cent overload. A snatch block that doubles the hoists capacity can be installed without tools.

•

Some engineers advocate the use of two-pair drop wire. This wire would be used in all locations where one-pair is needed at present and where there is a possibility that a second pair will be required in the same building at a later date.

We are not sure that this is a better idea than to use single pair drops and install them as required. We should be pleased to receive our readers' opinions on this idea.

Plant Man's QUIZ

By RAY BLAIN, Technical Editorial Director

Q. Can you advise us as to what type automatic switch may be used to turn lights on and off in outdoor type booths that are used in isolated locations?

A. Time switches can be used for this purpose, but they require considerable attention. The "on" and "off" time must be changed to conform to the night-time hours during certain times of the year. Moreover, power failures of even short duration can get the clocks out of phase so that readjustment is required.

There is a device available, however, which automatically turns the light on at night and off in the morning. It permits positive light supervision of a telephone booth without manual operation.

The heart of this "robot" light watchman is a sensitive photoelectric cell that responds to natural surrounding light, or absence of it, and energizes the "on-off" light switch.

This unit is encased in a compact steel-constructed cabinet and can be quickly installed on the ceiling of any standard telephone booth.

•

Q. We are considering conversion to automatic and would be pleased to receive some advice concerning maintenance. What is the minimum number of maintenance men considered necessary to maintain an automatic exchange in a small town, and will it be necessary to keep a switchman on duty at night?

A. First, let me say that you should not be afraid of automatic equipment maintenance for if certain basic principles are observed, you have nothing to fear. Likewise, good maintenance is never overly expensive.

In general, permanent supervision is required only in the larger exchanges and even those are often left unattended at night. The smaller exchanges may be unattended at all times.

In order to obtain reliable, economic results, the maintenance service must be well organized. The preventive maintenance procedures recommended by the manufacturer of the equipment must be complied with all of the time, and the equipment kept clean if the cost of operation is to be held to a minimum.

The actual maintenance service to be established to prevent trouble, such as routine testing, fault location, and fault reporting, should be arranged in accordance with a fixed program as far as possible.

Moreover, the person placed in charge of this service should make certain that it is carried out according to the plan at all times. The maintenance force should be adequate to properly maintain the equipment without rushing, but care should be taken not to overstaff. Again, the manufacturer of your equipment will gladly give you the proper advice to maintain the dial switching equipment in a satisfactory and economical manner.

•

Q. As a result of the increased interest and need for knowledge of electronics in the telephone industry several of our men have expressed a desire to take up amateur radio and obtain a license for a ham station. Can you advise us as to the proper approach to this problem?

A. It is suggested that you begin by purchasing a light paper-back book titled: "Getting started in Amateur Radio," published by John F. Rider Publisher, Inc., 116 W. 14th St., New York 11, N. Y. This book has 144 pages and sells for $2.40.

It is designed to teach anyone desirous of procuring his Novice Class license the necessary fundamentals of theory and the code.

In fact, the theory presented goes a long way in teaching the fundamentals for even the General Class license. Details relating to receiver and transmitter theory are included. Special emphasis is made to acquaint the prospective applicant for a license with the FCC regulations.

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Arthritis Victim Operates A Successful Telephone Service

By GEORGE A. BRIDGES*

"ARE YOU A NEGATIVE thinker?" "Do you feel life has passed you by?"

If so, you wouldn't have much in common with Louise Hanan of Whittier, Cal., for this courageous woman has mastered the Herculean task of operating a telephone answering service, although badly crippled since childhood with arthritis.

Enthusiastic and optimistic, Miss Hanan started her business in 1955 with three accounts and a switchboard installed by the General Telephone Co. of California. In two busy years she has increased her volume to the point where she is now handling 32 accounts with hopes of increasing this to 50. During a single day she answers from 118 to 150 calls. "Business has been so good," she says, "that I had General Telephone Co. install one of their newest switchboards last month."

How does she do it? "Simple," she says. "Although my hands are badly crippled I still have use of them and by keeping my notepaper, files, pencils and switchboard close to me I manage very nicely."

"Since I am on call 24 hours a day I found my bedroom to be the most practical place to handle calls. I have a family living with me in my home who care for my needs and my foster daughter, Joy Crieger, 13, who is an eighth grader at Compton Junior High School, is a great help to me," Miss Hanan added.

"I became afflicted with arthritis when I was five years old, which locked my hips and affected other parts of my body, including my hands. I was able to walk, however, until I was 23, but have since lost control of my legs," she said.

When asked if she ever took a vacation, Miss Hanan replied: "Where could I go that would provide me any more entertainment than my job? . . . I love talking to people on the telephone and I have made so many wonderful friends this way. I'd be lonesome without this switchboard. Everything connected with this work is exciting. My clients range from doctors, contractors, oil well executives to engineers, painters, plumbers, and hospital suppliers. I also handle calls for a child center and that's my busiest line."

G. A. BRIDGES

Miss Hanan claims she first became interested in developing an answering service through the inspiration of another disabled person, Robert Hubert, who also runs an answering service in Inglewood.

"This wonderful man, with only parts of arms and no legs, gave me invaluable tips on how to operate this business. I studied his board procedures and filing system and he made weekly trips to my house to make sure I could handle this operation on my own. When he felt I was ready, I contacted the General Telephone Co. and they installed my board . . . since then I would venture to say that I have been the busiest and happiest woman in Whittier."

When the question arose as to what she would like most in this world, she said: "More customers—I still have 14 lines available on my switchboard and I would like to fill them up. This job is my life, my entertainment, my future . . . just everything rolled into one, and the more customers I have the more friends I make."

Her pleasant, cheerful voice attests to this philosophy and it's easy to see why she has so many friends, for despite her disabilities, she can project herself into the future, and her future, like Louise, is certain to be on the positive side.

*Mr. Bridges is press relations coordinator for General Telephone Co. of California.

General Takes Over Ky. Exchanges of Continental

General Telephone Co. of Kentucky, Lexington, recently sold 2 million dollars principal amount first mortgage bonds, 4⅝ per cent series due 1987. The bonds were placed privately with two institutions.

In return for 2 million dollars principal amount first mortgage bonds of Southern Continental Telephone Co., General of Kentucky exchanged its 2 million dollars principal amount first mortgage bonds, 4¾ per cent series due 1977.

In addition, General of Kentucky sold 38,500 shares of its common stock to General Telephone Corp. for $2,002,000.

General of Kentucky is acquiring the Kentucky properties of Southern Continental Telephone Co.

The funds secured by General of Kentucky are being used to retire short-term bank loans amounting to 1.5 million dollars and to pay $1,882,665 on account of the purchase price for Southern Continental properties; the remainder of the funds will be used for construction.

Radio-Telephone Birthday

Sunday, Aug. 18, was the 40th anniversary (1917) of the first radio-telephone communication between the ground and an airplane in flight, which occurred at Langley Field, Va.

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helping you reach all America

U.S. Independent Telephone Association
Pennsylvania Building, Washington, D.C.

This 38th USITA national ad appeared in August 12 Time and August 23 U. S. News and World Report

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TRANSMISSION

MODERN
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EASY, ACCURATE
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SIMPLIFIED
INSTALLATION

COLORS AND
TWO-TONES

TIME-SAVING
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You can get all these features with Automatic's Type 80 Telephone!

Maybe you're still looking for *the* telephone that has *all* the features you want. If so, stop! Automatic's Type 80 Telephone is just what you've been looking for. Want proof? Then read—*slowly please*—the eye-opening points that follow (and note those *exclusive* features):

Automatic's Type 80 Telephone in new Forget-me-not Blue

- **LIFELIKE TRANSMISSION.** Excellent clarity, even on long lines—increases toll calls and toll revenue.
- **NO COSTLY "OFF-HOOK" TROUBLES.** Our "walking handset" (*exclusive feature*) toddles right into the cradle.
- **MODERN, FUNCTIONAL DESIGN.** Have a long look at the illustration and judge for yourself.
- **SIMPLIFIED INSTALLATION.** Time-saving "Installer's Hooklock" (*another exclusive*) keeps hook down—leaves both hands free to work on the telephone.
- **EASIER READING, ACCURATE DIALING.** New slanted dial, extended number plate and guiding arrowheads.
- **LOWER MAINTENANCE COSTS.** All Type 80 components can be removed quickly with just a screwdriver. And all units are equally accessible as well.
- **COLORS.** Build "2nd" telephone sales with Colonial Blue, Sunlight Yellow, Turquoise, Classic Ivory, Garnet Red, Sand Beige, Dawn Gray, Jade Green, Forget-Me-Not Blue, Camellia Pink and Gardenia White.

Want further proof? Then talk to any telephone man who has standardized on Type 80's. There are a lot of them...and they're the best boosters we have (followed closely by their subscribers). Next step is to send in your order. Address: *Automatic Electric Sales Corporation, Northlake, Illinois. Or call Fillmore 5-7111.*

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GENERAL SYSTEM

How to Finance New Telephone Facilities in Tight Market

By GEORGE W. WARNECKE*

THERE is probably no single industry in the country which has so much pressure for new facilities and gives as much thought to the placement, spacing and distribution of new financing as the telephone industry.

New space can be tremendously important. We are all familiar with the typical story of poor public relations resulting to telephone companies which neglect equipment, working space and storage shelter and promptly face the effect on their business in the area. On the other hand, modern companies appreciate the benefits of a more efficient architectural environment in terms of better service and operations.

Thus, the need for larger and better quarters is often undisputed and quickly acknowledged but financing of such expansion plans presents special problems. It is the purpose of the article to highlight some of these problems as they exist in the current tight market with special emphasis on the real estate financing side of the picture.

First, a preliminary observation about tight money in general. The term, misleading to say the least, has been overused as an excuse for business sluggishness. On the basis of a day-to-day working association with the country's leading banks and insurance companies, the only change that has been noted in the attitude of institutional investors is that they have become more selective. They have eliminated the fringe type of credit risks from the consideration of their finance committees. However, ample funds are still available for solid well-established business organizations that meet traditional credit requirements.

*Mr. Warnecke is head of the national real estate investment firm bearing his name. He has special experience in utilities financing.

Background Essential

But there is one consequence of this more selective attitude that is well for expanding companies to keep in mind: Investors now tend to analyze the background and potential of companies with great precision and care. Many companies and their executives seem to be unaware of this important hurdle.

For example, our organization recently received an application for financing from a nationally-known midwestern company. The application consisted of nothing more than a short covering letter and the company's last annual report. These provided insufficient information for our purposes. A great deal more information about a company is needed to arrive at a financing decision — even if the company is nationally known and has considerable investment appeal.

Before committing itself, a reputable financing organization wants to know much more than simply what fixed assets the company can offer as security. Information must also be supplied concerning number of exchanges, telephones in operation, equipment, debt ratio, record of earnings, labor pool, planning and development. The investor will also want to look into the experience and background of the company's management. And, of course, the investor requires detailed financial information including a pro forma balance sheet giving the projected effect to the new money and the new facilities.

Portfolio Form

In many companies such information would be prepared by the company's comptroller in conjunction with its architects, auditors, public relations people and management consultants. Where new sites and locations are involved industrial development commissions are usually glad to give assistance in providing analytical data on property value trends and labor pool.

Information covering these points should be assembled in portfolio form and held ready for submission to the financing outlet. Where underwriting of debentures is concerned, names of reputable houses in your area can be obtained from the Investment Bankers Association of America (425 Thirteenth St., N. W., Washington 4, D.C.). Similar information for real estate financing purposes is available through the writer, c/o The Editors of this magazine.

When a selection has been made, a short preliminary letter of inquiry is in order. It should state the nature of the proposed project, the amount of financing involved and the method of financing preferred.

Experience has shown that such a short preliminary letter of inquiry can be as effective as a personal visit in surveying the interest of underwriters and real estate investment organizations. Most of us know a sound business proposition when we see one and will not shun the effort of a long distance telephone call or cross-country travel to get more information, if necessary.

Real Estate Investors

As has been indicated, it is helpful to decide in advance which method of financing is to be chosen, since that decision determines both the type of financing organization needed and all further steps to be taken after such a connection has been established.

The use of straight and convertible debentures has been successfully tested and developed by telephone companies over the past few decades. Therefore, no further explanation appears necessary beyond the comment that the mar-

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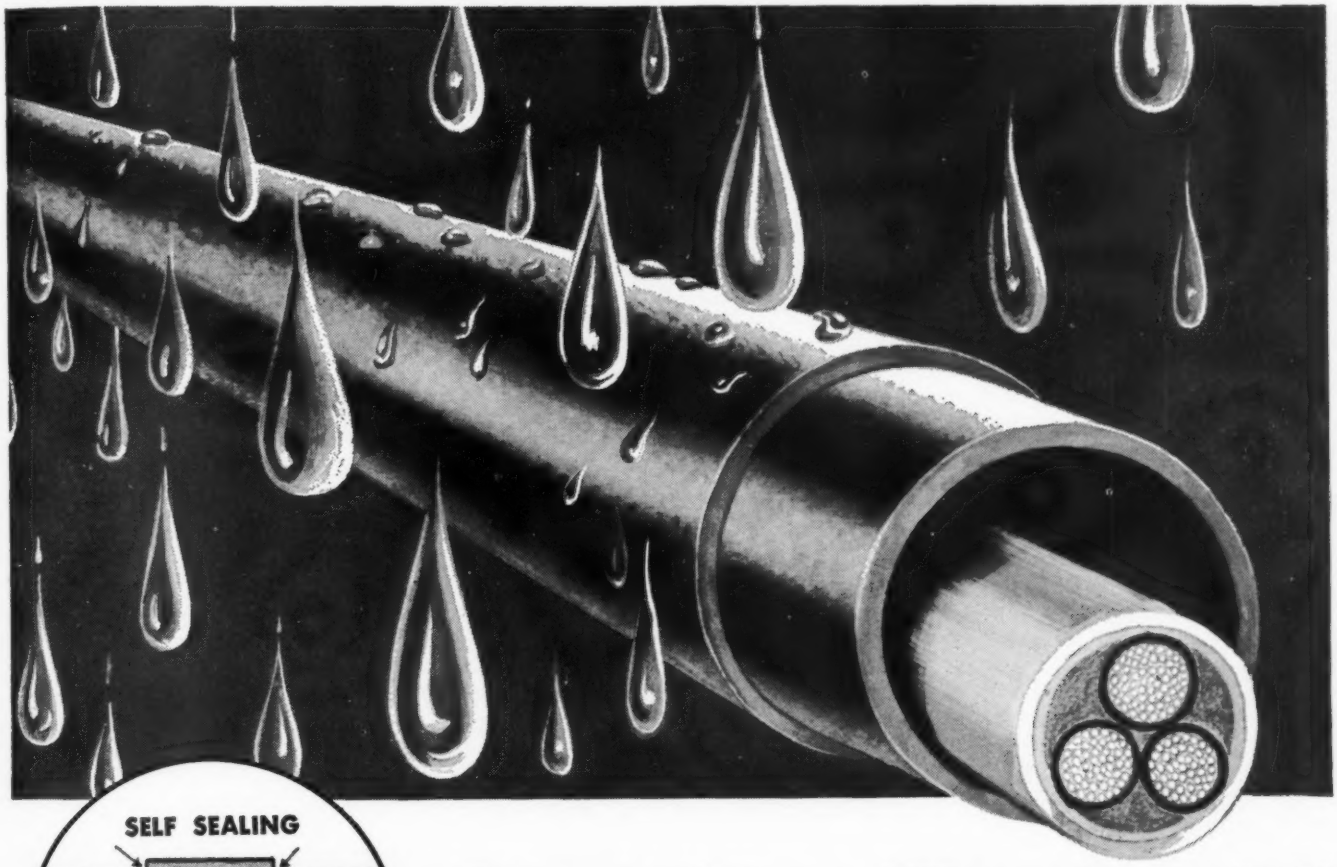

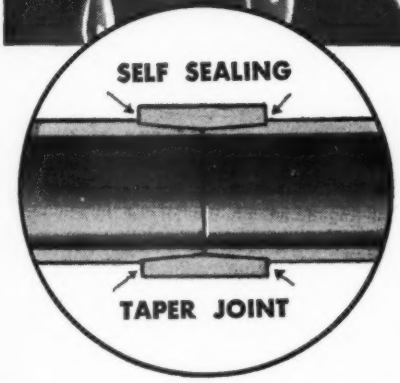

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Keep out corrosive ground waters, and you prolong the life of underground cables, say utility engineers!

Why? Because ground waters containing corrosive elements derived from the soil and concrete encasement attack cable sheath and shorten cable life. Orangeburg's impermeable wall and self-sealing Taper-Sleeve Joint shed them *"like water off a duck's back."* You get maximum protection with Orangeburg.

Orangeburg protects cables in many other ways. Smooth bore, low co-efficient of friction reduce incidence of abrasion. Its material is strong, tough, resilient, durable.

No other conduit is easier to install

Light, 8-foot lengths and a complete line of bends and fittings speed installation. Taper-Sleeve Joints tap water-tight in a jiffy. Orangeburg lays faster and at lower cost than any other type of conduit.

Orangeburg Fibre Conduit has prolonged cable life at minimum expense for utilities, municipalities and industry since 1893.

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FIBRE CONDUIT

ket is still receptive to well-planned issues by top credit companies.

However, financing through institutional or organizational real estate investors merits much more careful examination. Here, it seems that telephone companies enjoy a special advantage.

The so-called tight money market has caused real estate investors to place a special premium on owners and tenants which enjoy high credit standing and reputation. Public utilities whose finances are carefully controlled tower shoulder-high over the average manufacturer or service concern that appeals for construction funds.

In addition, the lease-back device just recently developed and perfected by the real estate fraternity has introduced an element of flexibility into the space requirement planning of telephone companies that harmonizes well with the industry's preference for temporary investments and its abhorrence of high debt ratios.

Build to Utility

In this connection attention should be invited to a new method of real estate financing largely pioneered by our firm. Under this method we build to the utility. We then rent the property to the utility while retaining ownership ourselves.

In a typical equity lease-out arrangement (with a West Coast telephone company) a repair and installation facility of 12,000 square feet was built to rent for $21,934 per year for the initial 15-year term with optional renewals for 10 years at $10,965 per year, plus a second optional renewal for 10 years at $8,775 per year, and a third optional renewal for 10 years at $6,580 per year.

The rental figures were predicated on a net lease basis and did not provide for the payment of property taxes, maintenance, insurance, etc. However, in view of the special tax position of public utilities, lease provisions were adjusted to create the most advantageous tax position for the utility.

The most widely known and practiced arrangement, of course, is the ordinary lease-back. In it, the company sells property it already owns to a private developer, then leases the property back on a long-term basis, again with an option to renew at lower rentals.

Rent Tax Deductible

As can be seen, both of these methods create new working space suitable to the individual requirements of the utility without depressing the debt ratio picture of the company. At the same time, of course, rentals paid for the new premises are tax deductible and improve the company's corporate tax position.

The conventional method of real estate financing is the permanent first mortgage loan. It is particularly attractive to the company that has an accelerated depreciation advantage or has a surplus of temporary investment funds.

In the case of utilities which are able to predict income with a high degree of certainty and which visualize a future accumulation of available surplus funds, it is advisable to make special provisions for mortgage prepayment privileges if this method is used.

When the expansion-seeking company has determined the exact mode of financing it wishes to use, that decision should be carefully checked against the current state of the market. Is the market receptive or opposed to a company of your credit standing? Is the type of financing you seek available under the circumstances?

A wrong decision in this respect may be costly and wasteful. Thus, for instance, a single-A credit company in the Midwest recently spent months in attempts to obtain bond and mortgage financing which never materialized. Its credit standing determined the issue before the venture had ever begun.

Listed Credit Ratings

As a general rule, credit ratings listed below open up these possibilities:

"AAA": You have your choice among all available types of financing. The company's outstanding securities position and capital structure will determine whether additional stock, bonds or debentures should be issued. Current interest rates are anywhere from 4½ to 5½ per cent and convertibility features are at a premium, particularly if the company has better-than-average growth possibilities.

Mortgage and Real Estate Equity Financing: Mortgage funds are priced between 4½ and 5½ per cent depending on the type of company involved. Rentals for custom built space range from $.60 to $1.25 per square foot.

For the *triple-A* concern the choice becomes one of the cost of money in a given field.

"AA": The opportunities are similar to those of "AAA" concerns — but desirability to investors is much reduced. As a practical matter, conventional, public market channels receive such companies much more readily than real estate financing concerns.

"A": Public utilities, normally, do not belong in this category. However, other companies of this credit standing are generally closed out of the public and the real estate market and must look to local stock issues, bank loans, sales of corporate stock and merger with larger concerns, as methods of financial relief.

A word should be added about amounts of expansion capital and timing of financing moves. Underestimating capital needs causes embarassment and loss of impact and progress in the expansion move.

One of our telephone company clients last year asked us to build a new facility in Missouri. The plans were drawn and approved but in the meantime time went by and the projected demands to be placed on the service center increased considerably. As a result, all preliminary plans and schedules had to be revised and financing had to be re-arranged.

Finally, the point cannot be made too strongly that postponement of expansion plans helps no one but the critics of your service among the general public. That's why a company's expansion needs should be studied as soon as humanly possible.

Brorein, Prizer Named to Board of General Telephone

Carl D. Brorein, president of the Peninsular Telephone Co., with headquarters in Tampa, Fla., and John B. Prizer, vice president and general counsel of the Pennsylvania Railroad, have been named members of the board of directors of the General Telephone System, it was announced by Donald C. Power, president.

Following graduation from the University of New Mexico in 1917, Brorein joined the U. S. Marine Corps and rose to the rank of captain. He joined the Peninsular company as corporate secretary in 1920, at which time the company was operating about 14,000 telephones. The company now operates in excess of 300,000 telephones. Mr. Brorein has been president-general manager since 1938.

He is past president of the Florida Telephone Association and of the United States Telephone Association, and presently is on the executive committee of each. He is a former president of the Florida State Chamber of Commerce, and is a former vice president of the U. S. Chamber of Commerce.

Mr. Brorein is widely active in local and national Boy Scout activities. During World War II he served as consultant in the communications branch of the War Production Board.

Mr. Prizer, a native Pennsylvanian, was graduated from Harvard University with Phi Beta Kappa honors in 1934. He received an M.A. degree from Cambridge University in 1936. Later in 1936, he joined the Pennsylvania Railroad as assistant solicitor.

He lives in Philadelphia, is chairman of the board of corporators of the Woman's Medical College of Pennsylvania.

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As a result, AMCRECO'S technical skill and experience, developed through half a century of serving the largest users of treated wood, is now reinforced by Union-Camp's resources.

Convenient plant locations, extensive resources and experienced personnel have been teamed to provide you with a new standard of service and dependability. This will be reflected in modernized facilities, improved deliveries (from stock in many cases) and careful attention to your specifie requirements.

Let us show you how this new organization can be of help to you.

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18 Strategically Located Treating Plants to Serve You

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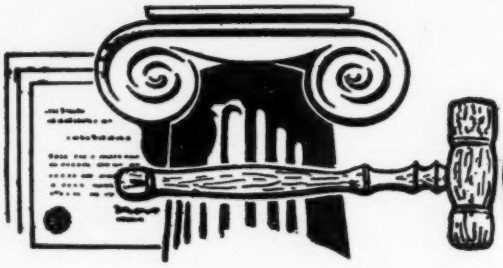

Courts and Commissions

Tennessee Suit Challenges Utility Reimbursement Act

Constitutionality of a 1957 Tennessee law requiring the state to reimburse public utility companies for the cost of moving their facilities when necessitated by federal-aid highway construction was challenged by a suit filed in Davidson County Chancery Court by the state attorney general's office on Aug. 6. (TELEPHONY, Mar. 30, p. 47).

Naming Southern Bell Telephone & Telegraph Co. defendant, the suit was brought on behalf of State Highway Commissioner W. M. Leech, who opposed the reimbursement measure when it was before the state legislature.

The new act provides for reimbursement for all utility removals off rights of way for interstate highways, including city expressways, and for "hardship cases" on federal primary, secondary and urban routes. As finally enacted, the law was a "compromise" measure which eliminated original provisions for the state to bear costs of moving utility lines along all secondary roads as well as federal superhighways.

The suit noted that the 1957 Tennessee legislature authorized the state to issue up to 30 million dollars in bonds over a two-year period to match federal highway construction funds.

Yet, the suit further pointed out, the state Highway Department has estimated the cost for relocation of utility facilities in connection with the interstate highway program "will amount to the staggering total of $15,370,000, and is more than one-half of the amount which the General Assembly authorized the state to borrow for highway purposes . . .

"Since the Highway Department was organized by the General Assembly," the suit declared, "the state has not expended its funds to pay for such utility relocations, and the defendant and other utilities for more than 60 years have not made demands for such payments, until recently."

The suit alleges that Southern Bell entered into a contract with the State Highway Department on Feb. 17, 1941, "under which it agreed to remove and relocate its facilities at its own expense, but it now refuses to honor its contract and to abide by the terms and conditions of its agreement."

State Attorney General George McCanless last spring advised Leech that the new reimbursement law is unconstitutional because it conflicts with a section of the state constitution providing that the credit of the state shall not be "loaned or given to or in aid of any corporation, association, company, corporation or municipality, nor shall the state become an owner in whole or in part of any bank, or a stockholder with others in any association, company, corporation or municipality."

Ohio Companies Ask to Raise Rates, Buy, Finance

The Van Buren Mutual Telephone Co., serving approximately 244 stations, has recently had an application approved by the Ohio Public Utilities Commission for an increase in rates (TELEPHONY, June 29, p. 46).

The record of the case showed reproduction cost new of $65,599.06. The observed depreciation amounted to $23,371 which resulted in a rate base of $42,228.06. The company's income available for fixed charges was a minus figure prior to the institution of the new rate treatment, and the income for fixed charges following the rate case is $961.60. The rate of return on the rate base of $42,228.06 is 2.28 per cent.

	Before	*After*
One-party business	$1.75	$6.00
One-party residence	1.75	6.00
Two-party business	——	5.00
Two-party residence	——	4.00
Five-party business	——	4.00
Five-party residence	——	3.00
Ten-party business	1.50	3.00
Ten-party residence	1.50	3.00
Rural business	1.50	4.25
Rural residence	1.50	3.00

•

The Minford Telephone Co., serving approximately 280 stations, has been authorized by the commission to purchase the Tri-County Telephone Co., Stockdale, serving approximately 107 stations.

The Minford company also was authorized to issue a 4 per cent certificate of indebtedness.

•

The Home Telephone Co., Fairview, serving approximately 1,205 stations, has recently received permission to purchase the Batesville Telephone Association, Inc., serving approximately 122 stations.

•

The Hopedale Telephone Co. serving approximately 639 stations, has made application to the Ohio commission for an increase in rates.

•

The Wellington Telephone Co., serving approximately 2,270 stations, was to have had on Aug. 22 a hearing before the Ohio commission on its rate application.

Pacific T&T Requests Raise In California Rates

Pacific Telephone & Telegraph Co. on Aug. 7 asked the California Public Utilities Commission for a 28-million-dollar increase in rates, it was reported.

Asking its fourth major rate increase in six years, the company cited higher wages and rising costs of plant expansion undertaken to keep pace with California's population growth.

Mountain States Asks to Raise Montana Rates

An application for permission to increase its Montana telephone rates by about 19 per cent was filed with the Montana Public Service Commission on Aug. 5 by Mountain States Telephone & Telegraph Co.

The higher rates would bring the company an estimated 3 million dollars in additional gross revenue, providing extra net earnings of $1,524,000 annually.

K. P. Todd, Montana vice president and general manager of the company, said the higher rates were necessitated

(Please turn to page 47)

ESCO RINGING EQUIPMENT

MEMBER

ADDITIONAL ESCO FEATURES (details in future ads pictured on the dial) — further explain why Esco components are included in installations of prominent suppliers like Automatic Electric Co., Federal Telephone and Radio Corp., Kellogg Switchboard and Supply Co., Leich Sales Corp., and Stromberg-Carlson Co.

permanent, precise alignment gives a quieter, smoother drive

The whispering-soft, velvet-smooth operation of an ESCO ringing assembly comes from its unique drive design. To begin with, motors and driven units are factory mounted in precise alignment. They never need to be touched again, even to change belts. An idler pulley provides initial belt tension. To change belts, it is only necessary to loosen the idler pulley, remove old belts from the sheaves, and replace with new ones. By keeping accurate alignment, belts last longer.

Less friction, lighter bearing loads, and less driving power are some mechanical advantages of this outstanding drive system. They add up to longer life, smoother operation and less maintenance for you.

But care and attention to important details like this is just one of many reasons why ESCO is preferred by engineers, suppliers, and users alike. The full facts are yours for the asking in our new brochure, ESCO RINGING EQUPMENT. Send for it today.

Write today for full information

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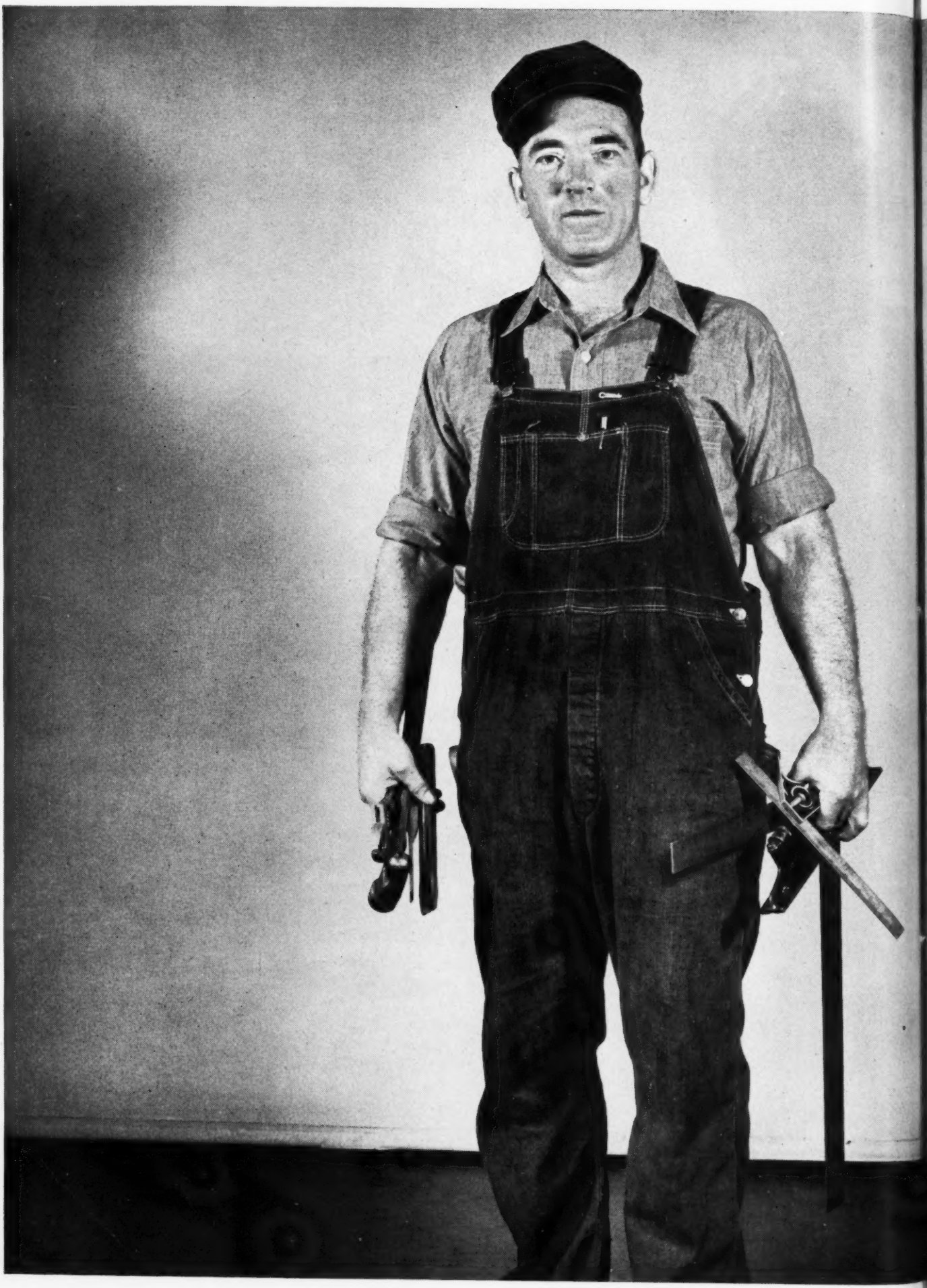

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PORTRAIT OF AN INDUSTRY

The Millwright

He moves, erects and dismantles machinery and equipment. In this way—by removing old and installing new production lines—the millwright contributes to the efficiency of the plants where telephone equipment is made for Bell telephone companies.

Like the lineman and the operator, the millwright lends his special skill and talents to help achieve the common goal of the telephone industry... providing better telephone service for America.

Western Electric
MANUFACTURING AND SUPPLY UNIT OF THE BELL SYSTEM

construction and maintenance DIGEST

- **25-year battery**
- **Quick and easy**
- **No clamps—no clips**
- **Underground winner**

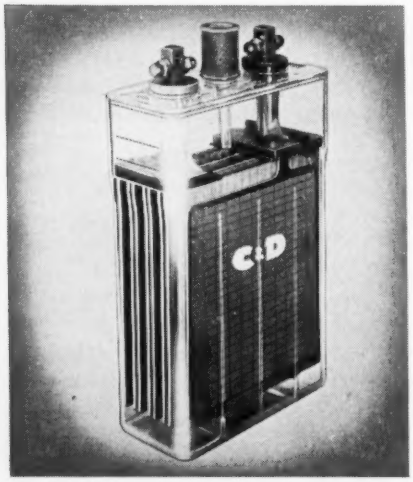
Published regularly to help you get the most out of your materials and supplies dollar

by John W. Garbutt, Inside Sales—Rochester

As a volunteer fireman I have to be alert at all times, just as Stromberg-Carlson is always alert to meet your supply needs. We're "on the job" for you 24 hours a day—because telephony is our full-time job, not just a sideline. Every order we fill for you brings you fine products, protected by a double guarantee—ours, and the maker's. And the attention given to your order is as careful as if our total program depended on it—because it does! Your supply business makes possible the research program that discovers new and better telephone equipment—to serve you. It's a pleasure to be working with you—we sincerely appreciate your support!

Battery will live 25 years

A quarter of a century is the expectancy of an extra-life battery made by C & D Batteries, Inc. In full-float service, their PlastiCal (lead calcium grids) battery will serve your power needs faithfully—often well beyond its 25-year expectancy.



It'll be 1982 before you even have to *think* about replacing this extra-life C & D battery, if you install it now!

C & D Batteries' PlastiCell (high tensile, special alloy grids) battery offers reliable power supply at lower cost, with a life expectancy of 14 years.

You can get both of these C & D extra-life batteries from Stromberg-Carlson.

Time and Money Saver

You'll find Cook PLX Cable Terminal the quickest, easiest and most economical to install because there's no stubbing, no splicing, no potting.

Available in 6, 11, 16 and 26 pairs

It's designed for use on plastic cable. You loop the cable through the terminal without cutting wires and terminate the desired pairs for distribution. You can also use the terminal for junctioning and terminating cable.

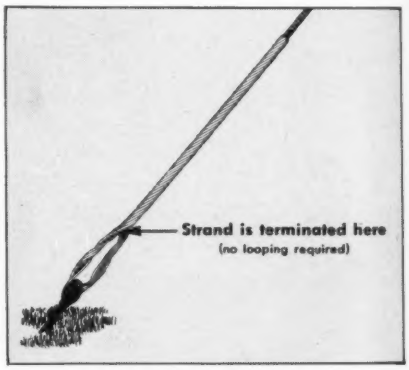
Grommets are furnished to seal the cable entrance. When ordering, specify cable sizes to get the correct grommets.

Heavy galvanized steel frame, deep drawn chamber, welded zinc cover and the famous XB Bakelite face plate with Everdur studs are some of the major features of the Cook Electric Company's PLX Cable Terminal. It can be furnished with or without protection.

Your Stromberg-Carlson representative can offer prompt delivery on your order.

You save up to 99c on each guy strand

Save as much as 99c per guy strand with Preformed Guy-Grip dead-ends—the safe, low-cost way of dead-ending guy wires.



Install PLP Guy-Grip dead-ends quickly and easily by hand.

Since each PLP Guy-Grip dead-end provides its own loop-eye, you don't need clamps, clips or loops, and you need less strand. Yet these Guy-Grip dead-ends hold the full-rated strength of *even* extra high strength steel strand.

You enjoy a substantial saving on installation time because the job is easily accomplished by hand, and most of the application can be done on the ground.

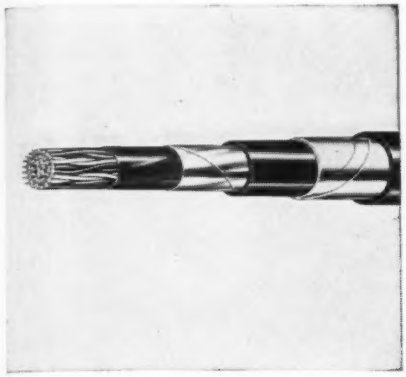
PLP Guy-Grip dead-ends can be applied either to the cut end or the coiled end of the strand, which means you can cut the strand to proper length after application of the Guy-Grip dead-end.

Your Stromberg-Carlson representative is ready to supply them to you.

XUM

Cable that can take it

This Ansonia Wire & Cable Company product offers finer electrical characteristics than any other comparable cable.



Available in 24, 22 and 19 gauge, 11 through 404 pair

If you want direct burial cable that stands up under severe ground conditions, order Ansonia Type 775-AP Cable.

Its individually insulated conductors are paired and cabled with a covering of aluminum tape, a plasticized jacket, plus a butt-lapped, stagger-jointed, flat armor tape and a second overall jacket of plasticized polyvinyl chloride.

When you need cable that gives maximum protection, specify Ansonia Type 775-AP Cable.

Fast delivery available from your Stromberg-Carlson representative.

Did you know... that the expanded Stromberg-Carlson Telecommunication plant provides 800,000 square feet of floor space devoted exclusively to meeting your equipment and supply needs? These increased facilities enable us to serve you better than ever.

Distributed by

STROMBERG-CARLSON

A DIVISION OF GENERAL DYNAMICS CORPORATION

Sales Offices: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

by continuing increases in the cost of providing service. He said the present rates, in effect since the fall of 1953, "are producing earnings below those required to keep the business financially sound."

On the same day the telephone rate increase application was filed, the Montana commission received a petition protesting present telephone rates and, in effect, asking a reduction.

General of SW Gains Rate Raises in Texas

The following rate increases became effective in exchanges of General Telephone Co. of the Southwest in Texas during July:

	Old	New
Somerset: Conversion to dial, 89 stations		
One-party business	$6.50	$9.00
Two-party business	5.50	7.50
One-party residence	3.75	5.00
Two-party residence	3.25	4.00
Four-party residence	—	3.25
Plano: Common battery—manual, 1,113 stations		
One-party business	4.50	5.40
One-party residence	3.00	3.60
Four-party residence	2.25	2.70
Denver City: Conversion to dial, 1,230 stations		
One-party business	7.25	10.00
Two-party business	6.00	8.00
One-party residence	3.75	5.25
Two-party residence	3.25	4.50
Four-party residence	—	4.00
Boerne: Common battery—manual, 782 stations		
One-party business	8.00	9.50
Two-party business	6.00	7.50
One-party residence	4.00	4.65
Two-party residence	3.50	4.00
Four-party residence	3.00	3.40
Mertzon: Magneto, 249 stations		
One-party business	4.25	7.50
Two-party business	2.75	6.00
One-party residence	2.75	3.50
Two-party residence	2.25	3.00

Decision Gives Michigan Bell Part of Requested Increase

The Michigan Public Service Commission on Aug. 8 handed down a decision allowing the Michigan Bell Telephone Co. rate increases sufficient to raise revenues $2,835,000. The company had requested an increase of 12.5 million dollars.

William M. Day, president of the company, expressing disappointment, said the ruling will be studied "most carefully to determine whether our next step will be an appeal to the courts."

Mr. Day called the decision a "bare bones type of ruling that compounds our difficulty of providing good service in a climate of rising costs. The decision poses a grave problem to the company, its employes, and its customers."

The commission said a formal order embodying the decision would be entered within a few days. Chairman Otis Smith and Commissioner James H. Lee agreed on the decision while resigning Commissioner Maurice E. Hunt held out for a higher amount and promised a dissenting opinoin.

Mr. Day said "It must be obvious that the proposed order of the commission will call for further economic retrenchments in the operation of our business. We will have to review our construction program most carefully to see how much we will be forced to cut.

"Despite increased efficiency and economy, we have been unable to bridge the gap between the soaring costs of doing business and the revenues under existing rates. Like the corner grocery or any other business, we have no other way of recovering rising costs except through an adequate increase in the price of our service. Certainly the increase allowed by the commission is too limited to be of much help."

Michigan Bell applied for the rate increase last November.

Georgia Commission Grants Authority for Rate Raise

The Georgia Public Service Commission on July 30 granted the Standard Telephone Co. authority for rates as follows, upon conversion of each exchange to automatic. The rates at the Clarkesville and Demorest exchanges will not be effective until certain other conditions prescribed by the commission are met:

	Dawsonville Helen	*Blairsville Cleveland Dahlonega Hiawassee Young Harris*	*Clarksville Cornelia Demorest*
Business			
One-party	$5.50	$6.00	$7.00
Two-party	4.50	5.00	6.00
Four-party	3.50	4.00	5.00
Residence			
One-party	3.75	4.00	4.25
Two-party	3.00	3.25	3.50
Four-party	2.25	2.50	3.00
Rural multi-party (flat rate)			
Business	4.25	4.50	5.00
Residence	3.50	4.00	4.25

In a companion order, the commission granted the Standard company authority to enter into a supplemental loan agreement with the REA for $618,000, making a total loan of $1,542,000.

Three Wisconsin Companies Ask Increase in Rates

The Wisconsin Public Service Commission on Aug. 20 was to hear the application of the Gilman & Western Telephone Co. for authority to increase rates.

The commission on the same date was

to hear the application of the Midway Telephone Co. for authority to raise rates at its Dorchester exchange.

Application of the Footville Telephone Co. for a rate increase was to be heard on Aug. 23.

Neb. Company Appeals Order Denying Rate Raise

The Skeedee Independent Telephone Co., St. Edward, filed an appeal on Aug. 8 with the Nebraska Supreme Court contesting a Nebraska Railway Commission order denying a general rate increase for telephone service.

The company's application for a general increase was denied Feb. 6 by the commission (TELEPHONY, Mar. 9, p. 44). Rates had been established by the commission on Nov. 1, 1950.

Later, in a rehearing on July 2, the commission again denied a general increase but allowed an increase in gross revenue of $2,539.02 with which to increase wages. On July 19 net monthly rates were approved to produce this revenue. (TELEPHONY, July 27, p. 40).

The company now serves 560 customers in the St. Edward area.

General Telephone Acquires Illinois Independent

General Telephone Corp. has acquired all of the outstanding stock of the Jerseyville Ill. Telephone Co., Inc., it was announced on July 31 by General Telephone's president, Donald C. Power.

Jerseyville Telephone Co., Inc., has approximately 2,700 telephones in service. It is anticipated that operating personnel will remain with the company and will become employes of General Telephone System.

Ind. Commission Engineer Oks Plant Improvement

William E. Roby, a supervising engineer for the Indiana Public Service Commission, recently inspected the Jasper exchange of the Indiana Telephone Corp., Seymour, to see whether the company has made the improvements required by the commission before it can increase its rates in the Jasper area, according to a report from Jasper.

When the rates were raised recently, for the company's other exchanges, the commission disallowed the company's request for an increase at Jasper until more switchboard positions were installed. Before the company could connect the new positions, fire struck the exchange on the night of June 13, temporarily crippling the existing service.

Mr. Roby after his inspection of the exchange reported to E. S. Welch of Seymour, the operating vice-president of the Indiana Telephone Corp., that he found that the company had done even more in the way of installing new switchboard positions than the commission had demanded, and said he would report that the company had complied with the recommendations that would qualify it to receive a rate increase in the Jasper exchange.

Mr. Roby, who inspected the exchange the day after the fire, said that in his opinion the company did "a marvelous job" in restoring service as quickly as possible. He said that in his opinion the company now has ample equipment to give "reasonable and adequate service." The commission was to have held a hearing on the basis of Mr. Roby's report.

Pacific T&T Petitions for California Rate Increases

A petition for increases in some of its intrastate rates was filed with the California Public Utilities Commission on Aug. 7 by the Pacific Telephone & Telegraph Co. A company spokesman said the proposed higher rates would net less than 14 million dollars after income taxes.

Although not asking for a raise in one-party and multi-party line rates, the company petitioned for:

(1) The addition of one message unit to most calls beyond 8 miles. This would mean an increase of about 4½ cents for each call of this nature.

(2) A raise in the cost of person-to-person calls within the state which would vary from five cents over short distances to 40 cents over long distances.

(3) New service connection charges such as an increase from $4.00 to $5.00 for moving and changing a subscriber's telephone; from $7.00 to $10 for installation of new residence service; from $10 to $15 on new business service and from $4.00 to $7.00 where a telephone is already in place but not connected.

Robertson Named to Post On Oklahoma Commission

John W. Robertson has been named telephone engineer of the Oklahoma Corporation Commission succeeding Bernie Richardson, who retired after serving in that capacity since 1923.

Mr. Robertson is a telephone man, having previously owned and operated telephone exchanges at Butler, Apache and Geary, Okla.

Maine Company Given Raise

The Nash Telephone Co., Damariscotta, has been authorized by the Maine Public Utilities Commission to raise its rates to produce $27,768 more in annual income.

Ohio Companies Adopt Rules On Non-Listed Numbers

Some Ohio companies recently adopted tariff rules and regulations covering "Non-Published (Non-Listed) Telephone Numbers." The rules read as follows:

"Non-published telephone numbers will be permitted upon receipt of an authorization, signed by the subscriber in a form satisfactory to the applicant;

"The company shall not be obligated to complete exchange or message toll calls to such telephone under any circumstances and regardless of any emergency, unless such calls are placed by number;

"The company shall not be liable for failure or refusal to complete any call to such telephone when such call is not placed by number.

"The company will endeavor to prevent the disclosure of the number of such telephone, but shall not be liable should such number be divulged through inadvertence."

General of Cal. to Ask For General Rate Raise

General Telephone Co. of California on Aug. 8 announced its intention to file an application with the California Public Utilities Commission for a general rate adjustment. Final details of what the company will ask the commission to authorize have not been completed. The application will probably be ready for filing during the month of September.

"Adjustments in telephone rates are necessary to help compensate for the heavy increase in labor and material costs," Edwin M. Blakeslee, General Telephone president, said, "as well as the increased costs of obtaining funds to carry on our tremendous construction program."

The last general rate increase authorized for the company was in 1951. Certain rate adjustments were made in June of last year which actually resulted in a yearly decrease of $830,000 in the company's income.

"As soon as our current studies are completed, we plan to release more detailed information to our customers regarding how they may be affected," Mr. Blakeslee said.

Vetoes Petition to Force Company to Build Lines

The Missouri Public Service Commission turned down the petition of nine telephone users residing near Richland to force the United Telephone Co. of

Meant for each other...

MODEL DCR-1

There are pieces to a puzzle and words to a song—and there's the telephone and the ELECTRONIC SECRETARY®.

With this automatic answering device, you're sure to increase the value of the telephone to your subscriber . . . and, you gain additional revenue for your company.

The Electronic Secretary is a "natural" for such subscribers as doctors, retail establishments and service organizations of all types. The Electronic Secretary will work 24 hours a day, 7 days a week, answering the telephone automatically by means of a recorded announcement. Incoming messages are recorded so that they may be played back when convenient.

Extremely simple to install and operate, and the near zero in maintenance assure dependable and efficient performance.

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1101 South Prairie Avenue, Waukesha, Wisconsin

A Member Of The General Telephone System
One Of America's Great Communications Systems

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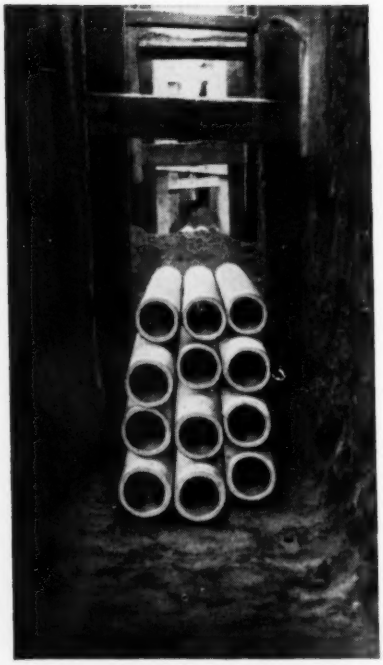
Long, lightweight lengths of Transite Conduit with new J-M Plastic Coupling ready for far west telephone installation.

...makes **Transite Ducts** cost far less to install



Transite Conduit with new J-M Plastic Coupling are installed in direct contact, saving trenching time and backfilling.

This unique plastic coupling, developed by Johns-Manville especially for telephone service, enables you to install Transite® Conduit at greatly reduced cost. It provides the following advantages:

1. **No separation between ducts**
2. **One backfill instead of several**
3. **Narrower, shallower trench**
4. **Faster installation**
5. **Watertight, silt-tight joints**
6. **No joint sealer**

Furthermore, the tight joints formed by this J-M Plastic Coupling enable you to use pneumatic rodding instead of expensive hand rodding—and eliminate cleaning.

Major telephone companies find that Transite Ducts provide better cable protection at lower cost. Made of asbestos-cement, they can't rust, are immune to electrolysis, resist corrosion and all normal soil stresses. The light 10-foot lengths are easy to install . . . reduce the number of joints in the line.

For more information, call your nearest J-M District Sales Office or write Johns-Manville, Box 14, New York 16, New York. In Canada, Port Credit, Ontario.

JM PRODUCTS

Johns-Manville

TRANSITE DUCTS

MADE OF ASBESTOS

Kansas City to build a line for them at company expense.

The commission said it would be unreasonable to force the United company to pay the entire cost of stringing a line capable of providing dial service.

The company estimated that each customer would have to pay $445 as his share of the cost of 12 miles of line if the customers wanted to have dial service. Or they could buy the wire at cost and string the line themselves to provide the kind of switcher service they used to have before the Richland exchange was converted to automatic operation last year.

Detroit Council Candidate Sues Michigan Bell

A candidate for the Detroit City Council is suing the Michigan Bell Telephone Co. for $100,000 because his name is not listed in the telephone book, the Associated Press reported on Aug 8.

Arthur J. Mader claimed in the circuit court suit that he has lived at the same address and has had the same telephone number listed in previous telephone books for 25 years.

Central Telephone Offers $1,750,000 Bond Issue

A public offering of 1¾ million dollars of Central Telephone Co., Chicago, 5½ per cent convertible subordinated debentures, due 1972, began on Aug. 13. The underwriters, headed jointly by Paine, Webber, Jackson & Curtis and Loewi & Co., offered the securities at par.

The debentures are convertible from April 1, 1958, into common stock at the initial rate of $21 principal amount of debentures per share. Proceeds of the sale will finance a recent purchase of new properties, and other corporate projects.

NE T&T Asks Raise in Maine

An increase of 11 per cent in its Maine rates was sought by the New England Telephone & Telegraph Co. in a petition filed on Aug. 9 with the Maine Public Utilities Commission.

A Half-Century of TWX

If all the teletypewriters in the world were to go into operation at once, in one minute nearly 20 million words would be printed. That's the equivalent of a 4,000 page newspaper. Yet only 50 years have passed since the beginning of the Teletype Corp., a Western Electric subsidiary.

XUM

Yard Named Chief Engineer Of General of the SW

A promotion and transfer for Louis D. Yard, general plant manager for General Telephone Co. of California, will become effective on Sept. 1, when Mr. Yard assumes duties as chief engineer for General Telephone Co. of the Southwest, San Angelo, Tex., according to Donald C. Power, president of the General Telephone System, with offices in New York City.

L. D. YARD

Harold A. Hahlbeck, operating vice president of General Telephone Co. of Illinois, will succeed Mr. Yard as general plant manager, effective Aug. 16.

A member of General's staff since 1936, Mr. Yard began his career with the company as an instrument shopman in Ontario. He was transferred

H. A. HAHLBECK

shortly thereafter to Pomona as a plant clerk, where he remained until 1939 when he became a fieldman in Long Beach.

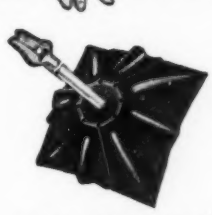
During World War II, Mr. Yard, a

MIKE THE MOLE SAYS:

Give the GUY a CHANCE

I get around... and I know that Chance Anchors really hold

YOU GET THE MOST FOR YOUR MONEY WITH CHANCE ANCHORS the most complete line



8-WAY EXPANDING

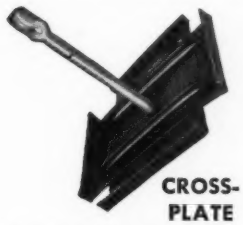
The guy load is distributed all around the anchor—no wasted space between blades. Usually installed in clay or loam.

NO-WRENCH SCREW

For hand or machine installation. Pitch-controlled blade goes down faster and adds to holding power in sandy soil, soft clay or loam.

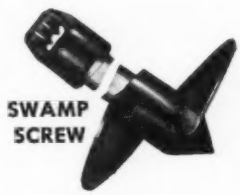
NEVER-CREEP

Made of structural steel. Pulls *entirely* against solid, undisturbed earth. For extra heavy loads in clay or loam.



CROSS-PLATE

For heavy-duty anchoring in machine-bored holes. Holds better than logs or slugs. Saves time and money.



SWAMP SCREW

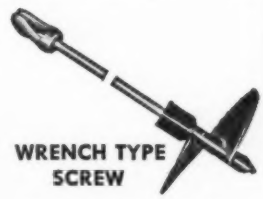
For swamps, marshes, quicksand, river crossings or seasonally flooded areas. Screws down deeply by adding sections of pipe.

8-WAY CONE

Acts as inverted wedge. Flaring base and flat faces increase wedging action. Used in rocky areas with rock wedging.

EXPANDING ROCK

No grouting necessary. The greater the pull, the tighter it wedges against solid rock. Set in 2" drilled hole.



WRENCH TYPE SCREW

All steel—double arc welded. Anchor hub absorbs installation strain. For light loads in sandy soil, soft clay or loam.

POLE KEY ANCHOR

Keys poles at the butt to reinforce them against unbalanced loads in soft soil. Ideal for congested urban areas.

Both the soil type and condition are important factors in determining the type of installation and the kind of anchors to use. That's why Chance Anchors are made in so many types and sizes. The anchors shown above are made in a wide variety of sizes. Each type is designed for certain soil and guying conditions. Each of these anchors will do its specific job better than any other anchor you can choose.

Protect your investment in line construction. Analyze your soil and guying conditions, and specify the Chance Anchors that meet your particular requirements.

There is a CHANCE Anchor Distributor in your area who can probably fill your order directly from stock.

SPECIFY CHANCE FOR SERVICE!

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CENTRALIA, MISSOURI

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ABC INDUSTRIES

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YES!

ANYONE CAN INSTALL

FLEXIDUCT

FOR OVER FLOOR WIRING

It's the versatile floor duct that solves over-floor wiring problems quickly and effectively, with adequate protection from sweepers, mops and equipment on casters. Installation is easy and permanent. You just fasten Flexiduct in place with its own special cement. There's no drilling or necessity to use screws and fasteners. Flexiduct's flexibility allows it to adhere evenly and securely to all types of floor surfaces and it is adaptable for installations ranging from 2 conductors to 25 pair switchboard cables. Now in choice of black rubber or brown plastic.

NEW—FLEXIDUCT QUARTER-ROUND FOR BASEBOARD INSTALLATIONS

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BUCKEYE TELEPHONE & SUPPLY CO.
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reserve officer since 1935, was called to duty with the Army Air Force in Long Beach in 1941 as a first lieutenant. He later served as base comunications officer at Air Gunnery School in Las Vegas, Nev. Mr. Yard also served in the European theater in North Africa and Italy from January 1944 to November 1945 as wing communication officer for the 49th Bomber Wing, and as assistant communication officer in the 15th Air Force Headquarters in Italy.

Returning to General Telephone Co. in 1946, Mr. Yard assumed the position of engineer in the plant department. In 1953 he was sent to Whittier as central division manager and during that same year returned to Santa Monica as general plant manager.

Born in Clifton, Colo., Mr. Yard received his elementary and high school education in Colorado Springs, Colo. He later attended Colorado College where he received a bachelor of science degree in engineering.

Harold A. Hahlbeck joined the General Telephone Co. of Illinois in 1953 as assistant to the vice president. In April 1955, he was appointed operating vice president of the company, which position he now leaves to accept the California appointment.

Mr. Hahlbeck started with Hooper (Neb.) Telephone Co. in 1919 as a combination man. After several years there, he joined the Northwestern Bell Telephone Co. and held various plant and engineering positions with that company in Omaha, Sioux Falls and Grand Island, and at the latter location, he was district plant engineer.

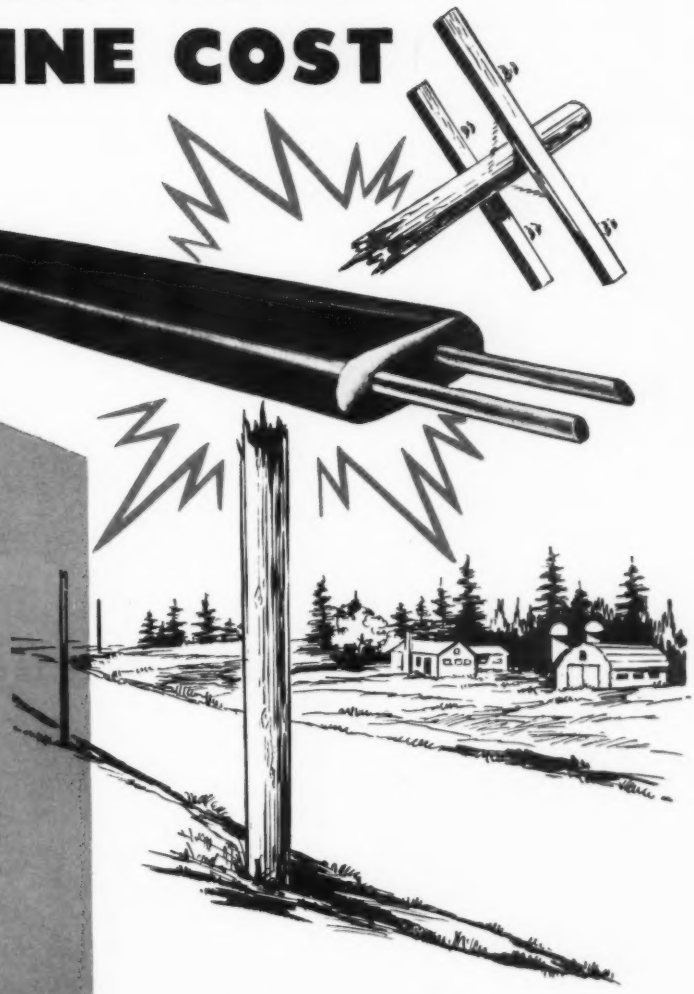
In 1927, Mr. Hahlbeck accepted employment with the International Telephone & Telegraph Corp. While with them, his work covered assignments in the United States, Mexico and various South American countries, principally Argentina. While in those countries, Mr. Hahlbeck held positions of general plant manager and chief engineer with large operating telephone properties, was a member of IT&T South American general staff organization, a member of the technical advisory group to the Argentine Government, and was also connected with manufacturing phases of the telephone business, including the supervision of microwave radio-telephone installations.

A native of Nebraska, Mr. Hahlbeck attended the University of Nebraska college of electrical engineering for four years. He also took night courses in commercial law and accounting at Creighton University in Omaha, Neb.

The Will to Do

"All things are in fate, yet all things are not decreed by fate."—PLATO.

REX ONE PAIR CUTS POLE LINE COST



A Span lengths up to 600 feet are possible with Rex One Pair Distribution Wire. Extra service poles are eliminated on long extensions and long drop runs.

B Economically installed — no cross arms, pins, or glass insulators. Wire is simply installed on tangent supports and drive hooks.

C No tree leakage — a heavy extrusion of high molecular weight, high dielectric strength polyethylene, enclosing both conductors prevents accidental grounding and eliminates excessive right of way clearance.

D Excellent transmission characteristics — similar electrical properties to R.E.A. listed Rural Distribution Wire assure good subscriber service.

E Easily transposed — no special brackets; simply twist span at installation. Cross talk and induction noise are kept to a minimum.

F Ordering data: Two conductors #12 or #14 AWG Copperweld or .083 steel. 5,000 or 15,000 foot reels.

Other REX TELEPHONE PRODUCTS

EXCHANGE AREA CABLE
R.E.A. LISTED
DIRECT BURIAL CABLE
RURAL DISTRIBUTION WIRE
R.E.A. LISTED
URBAN DISTRIBUTION WIRE
'D' INSIDE WIRING CABLES

SEND FOR TECHNICAL SPECIFICATIONS and PRICES

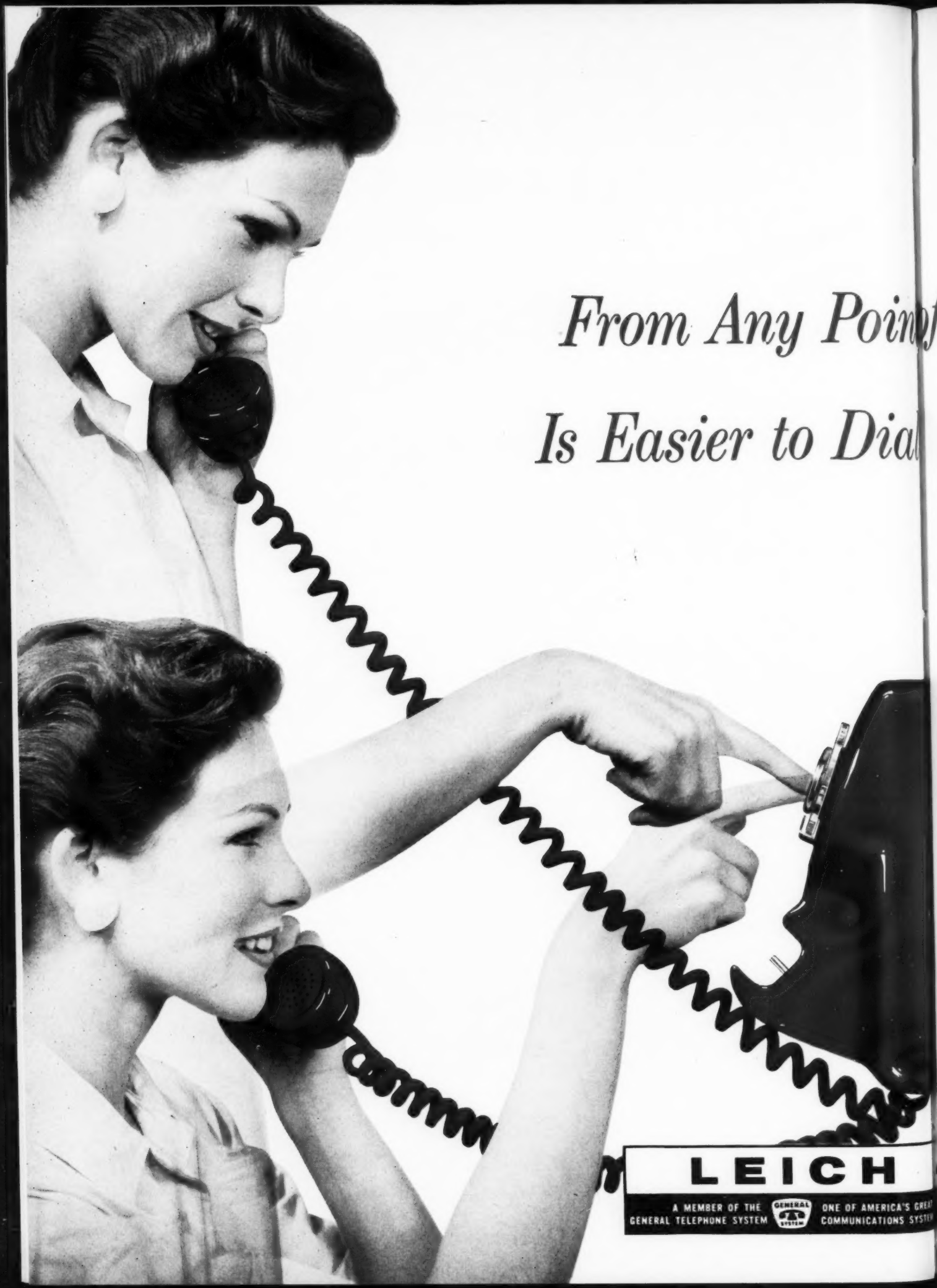
REX WIRE & CABLE

Manufactured by

THE REX CORPORATION

100 HAYWARD ROAD, WEST ACTON, MASS.

INDEPENDENT


From Any Point
Is Easier to Dial
LEICH
A MEMBER OF THE GENERAL TELEPHONE SYSTEM
GENERAL
ONE OF AMERICA'S GREAT COMMUNICATIONS SYSTEM

in of View, the Leich Telephone

Because the Leich dial is mounted on an angle, it's easier to read from both sitting and standing positions

Some people like to sit down while they talk on the telephone. Others would rather stand up. The Leich 100 telephone lets them do both.

The angle of the Leich dial makes the difference. It allows you to mount the telephone lower on the wall — where your subscribers can read it while sitting. Yet because of the upward angle of the dial, it's easy to see while standing, too.

Some wall telephones have their dials mounted vertically. If the instrument is mounted low on the wall, it can only be dialed while sitting. If it's mounted higher, you can only dial it while standing.

The Leich 100 telephone solves this problem, and saves you money on inventory, too. You can use it as a desk telephone, as well as a wall installation. For desk use, you set it down. For wall mounting just turn it up and over.

Order convenient, flexible Leich 100 telephones today. They're available in black and 10 cheery colors.

The Leich 100 Telephone Serves for Wall or Desk Installation

LEICH SALES CORPORATION, 427 WEST RANDOLPH STREET, CHICAGO 6, ILLINOIS

PACIFIC COAST: 11401 WEST PICO BLVD., LOS ANGELES 64, CALIFORNIA SOUTHWEST: 1227 SLOCUM STREET, DALLAS 7, TEXAS

manufacturers of telephones, switchboards and related apparatus since 1907

TAKE ALL YOUR PLANT MEASUREMENTS

the Modern Way

WITH A

Rolatape

MEASURING WHEEL

Telephone men from coast to coast are turning to the ROLATAPE for their outside plant measuring....and small wonder! For ROLATAPE is the quick, economical, *dependable* way to measure all distances, over all kinds of terrain. Simple to operate, ROLATAPE measures and records total as it is rolled along. Rugged, yet lightweight, it folds compactly for easy handling.

The Model 400 measures and records total up to 19 miles.

FAST
ACCURATE
ECONOMICAL

Send Today for Complete Information:

ROLATAPE Inc. T-8-57
1741 14th Street
Santa Monica, Calif.
Send me free details on ROLATAPE:

NAME_____

FIRM_____

ADDRESS_____

CITY, STATE_____

IN THE NATION'S CAPITAL

Concluded from page 18

states include taxes on local telephone service, theater and other admissions, cabarets, club dues and initiation fees, coin-operated amusements and gambling devices, leases on safe-deposit boxes, bowling alleys, and pool tables. Altogether, these taxes are expected to bring the federal treasury about $542 million during the current fiscal year. Telephone companies have taken the position that telephone excises, having been originally levied as an emergency measure, should be eliminated under present peacetime conditions. There is some speculation that if the local taxing power were turned over to the states, the excise tax might become permanent, as well as increased in some areas.

It will be noted that no suggestion was made about transferring federal excise tax on long distance interstate calls to the states. Indeed, it is doubtful that such a transfer could be made under the Constitution. As to intrastate toll calls, the taxing power would probably follow the tax on local exchange rates, if the transfer of the latter to the state governments were ever made.

All this discussion about transferring tax authority to the states is still very much in the preliminary stages. Secretary Anderson conferred about three hours with the other members of the task force at a meeting in Hershey, Pa., on Aug. 10. Officials were reluctant to be quoted about this but several of them did say afterward that transfer of these taxes seems unlikely.

The federal functions which are to be considered for the direction and financing by states are these: Vocational education, natural disaster relief, the school-lunch program, water pollution, school construction, supplemental old-age assistance and small stimulative grants.

Formulation of the task force was suggested by President Eisenhower in his address to the national governors conference in June. In plugging for decentralization of authority in the national government he said the study group should look for programs where there is duplication of federal and state efforts.

He said elimination of such costly operations would cut down "the freight charges on money being hauled from the states to Washington and back." In calling for states to take over some of the programs now being directed from Washington, the President said: "This presupposes that federal taxes would be cut more than state taxes would be raised, to support the transfer functions."

In getting the task force started toward achieving the President's aim, Secretary Anderson told the group: "The most important thing we can hope to accomplish by our initial effort is an actual agreement embodying certain specific functions and sources of revenue which can be returned to the states." After the long afternoon session he and other officials said they were satisfied a good start has been made.

Senate Floor Telephone

Something new has been added to the floor of the Alabama State Senate. It is a telephone. Never before has the otherwise ubiquitous telephone invaded the sanctuary of parliamentary desks. Not even in the two Houses of Congress in Washington. There are plenty of them, of course, in the cloak rooms and lobbies surrounding the rotundas of all our law assemblies, both state and federal.

But, Alabama's governor, James E. Folsom, decided he wanted a direct line to his majority floor leader in the state senate. And so a telephone was installed last week on the state senate floor for Sen. Broughton Lamberth.

The private telephone, which is to be billed to the governor's office, was installed at Lamberth's desk, the only telephone ever put in use on the senate floor. It will enable the governor to keep in constant touch with his floor leader while the senate is in session. To keep from disturbing other senators with ringing bells, the instrument was rigged with a blinking light to denote incoming calls.

View on Socialism

"Socialism is a system which grows in direct ratio and proportion to the surrender of individual responsibility. When the states gives us what we have, it will not be long until the state owns what we are." — BISHOP FULTON J. SHEEN.

Expanding Market

"[The population growth now at 170 million is amazing. It provided a] fresh stream of talent and skills to build a better America. I am happy to welcome this vast throng of new customers for America's goods and services. They help insure a rising standard of living and reflect our prosperous times."— SINCLAIR WEEKS, *Secretary of Commerce.*

DEPARTMENT OF TECHNOLOGY
BUFFALO AND ERIE COUNTY PUBLIC LIBRARY

XUM

Jolly Joe's not so lighthearted nowadays

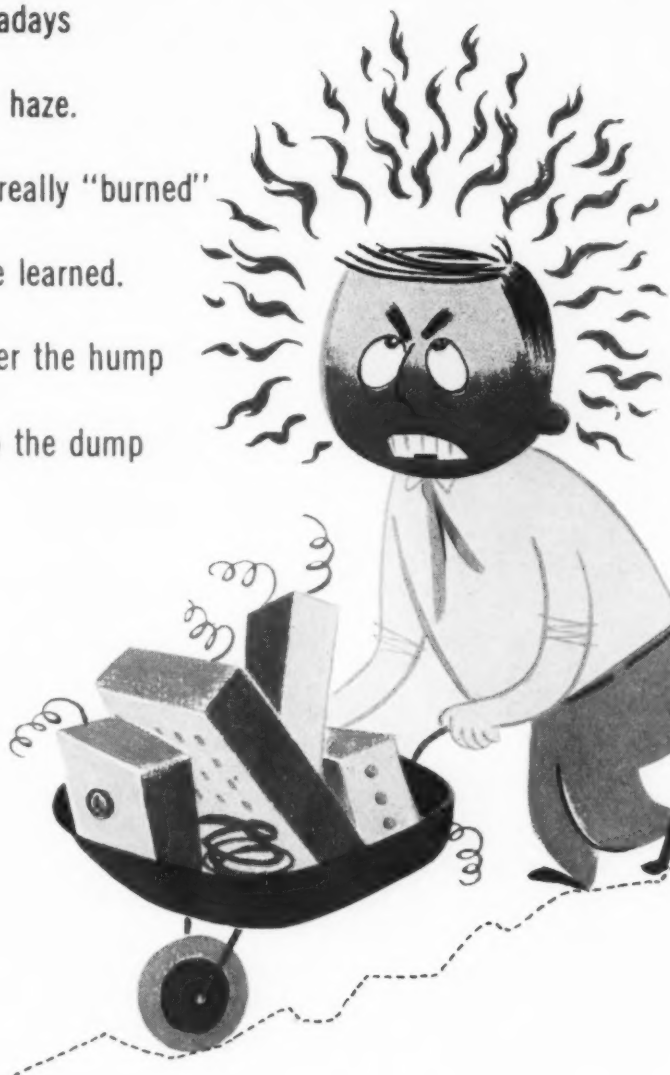
You see, he went dial in a bit of a haze.

Came Direct Distance Dialing, Joe really "burned"

For changes were far too costly, he learned.

Just when he'd thought he was over the hump

He had to consign his exchange to the dump



MORAL: BUY STROWGER AUTOMATIC—it's ready for anything!

Poor Joe! If he'd only bought Strowger, his investment would have been safe. Strowger Automatic meets every requirement of Direct Distance Dialing, easily and economically. Investigate Strowger now . . . call in your friendly Automatic representative. He'll be happy to help you plan a prosperous, secure future.
Address: *Automatic Electric Sales Corporation, Northlake, Illinois.*
Or call FIllmore 5-7111.

AUTOMATIC ELECTRIC

A member of the General Telephone System
One of America's great communications systems

GENERAL TELEPHONE SYSTEM

Pat. Pend.

*KLEIN KUT PLIERS

for both regular and heavy-duty cutting

It was Klein that produced the first and still the finest regular side-cutting plier. Klein also gave the industry the modern, streamlined version so much in demand.

And it's Klein again with a new, high leverage cutting plier for light- or heavy-gauge wire, including No. 2 weatherproof hard drawn solid copper wire, and A.C.S.R.

There's no extra hinging of any kind—no uncomfortable wide-spread handles—with this new Klein-Kut Plier. The offset hinge permits the extra-high leverage and operation is as smooth and easy as with any other Klein Plier. Forged from high-grade tool steel, individually fitted, tempered, adjusted and tested. Ask for No. 213-9 N.E. for streamlined pattern.

Regular pattern available
Same high-leverage design, but in the original Klein side-cutting pattern. Ask for No. 213-9.

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7200 McCORMICK ROAD • CHICAGO 45, ILLINOIS

SCHOOL BY TELEPHONE

Concluded from page 20

heart-warming tribute to the effectiveness of the system, and to its value for the individual and for the community.

However, despite its proven values, it is surprising that less than 5,000 of the estimated average of 130,000 homebound and hospitalized youngsters nationally are as yet benefiting from this service.

Perhaps two seemingly common characteristics of schools and telephone companies are largely to blame. Being ultra conservative in their outlook, both are frequently reluctant to discard old ways and to pioneer new ideas, methods and services. And, being in a "mass service business," both may tend to overlook the exceptional situation or need.

Many telephone folks seem to wait for the school people to ask for the service, while educators wait for the telephone companies to offer it. Meanwhile, the shut-in child, who usually gets little more than a few hours per week of home instruction from a visiting teacher, is missing out on the important educational, psychological, and social values that "Teaching-by-Telephone" can provide.

I believe telephone companies have many good reasons to take the initiative in offering this service; and I know that, if a pilot program of two or three experimental installations for a single term is suggested to a school system, the basis for a future policy and procedure will usually have been firmly established.

Although the market is limited (on the average only three or four children per thousand school-age children are homebound or hospitalized), the rewards to the companies are particularly significant. The extra revenue it yields should more than pay its way.

But, most important, are the public relations benefits—the community goodwill and publicity—which invariably must result from this humanitarian educational public service.

The results in the use of the school-to-home telephone have not always been dramatic, but I cannot imagine any handicapped student who has not gained a great deal through its employment.

It will be a wonderful day when every disabled child—no matter what his or her disabilities are—will have the opportunity to develop as fully as possible.

The telephone technique described in this article can play a decisive part in making that possible for many of our young people — and it is my fervent hope that all telephone companies — both Bell and Independent—will take the initiative to discuss the technique with their local school authorities, leading to mutual agreement to make the school-to-home service available in their communities.

(EDITOR'S NOTE: As to the financing, the cost of Executone school-to-home equipment, now available to Independent telephone companies through Leich Sales Corp. and Automatic Electric Sales Corp., can be amortized in less than 15 months by an equipment rental charge of about $10 per month, in addition to usual line rental and installation charges. The schools pay these charges and in most states they are financed out of state-aid funds for the handicapped; and in addition, many local, civic, parents' and social service organizations contribute towards the cost of school-to-home facilities.)

THE PUBLIC AND DIAL CONVERSIONS

Continued from page 22

The people are using and enjoying the new dial service. Now comes the concluding phase of my presentation, and one I like to title, "Dial Conversions—Post Operator, or Post Mortem."

In other words, after dial conversion, then what? Is the telephone company still interested in the characteristics of the community it serves, or has that interest died with the "pulling of the picks"? If the company attitude after conversion is one of—"Well, we've given you the best there is, now we're pulling out," then certainly, the community will be holding a "post mortem" on the company's public relations program very soon.

If, on the other hand, the company recognizes its continued community responsibilities after dial conversion, then chances are good that public relations will not suffer adversely. Often, however, the serving company is guilty of having severed all personal contact with the community effective immediately upon conversion. My remarks now are directed toward companies contemplating a conversion in a small exchange and where no employes will be stationed in the area subsequent to the conversion.

For years, the customer has been

able to take his telephone problems directly to someone in the community. Perhaps he has known company employes personally. Then, all of a sudden this local contact with the company ceases to exist when the automatic system is installed. Now the customers must communicate with a distant voice, conveying his problems to a stranger, and then *hope* his request has been understood. If not successful, he has no alternative but to pick up the telephone and try again. In many instances, the person reached via the telephone is not an employe of the local serving company, since CDO's (Community Dial Offices) often are connected to a nearby toll center of another company. The customer knows, this, too, and could easily get the impression that his company was not particularly interested in his problems any longer.

Public relations people are today giving this very problem much consideration. As we continue to expand the automatic features of telephony, the human element is pushed further and further into the background. We are making ourselves less and less available to our customers and the public. When a community goes dial, something must be done to insure retention of first person contact between the customer and the company.

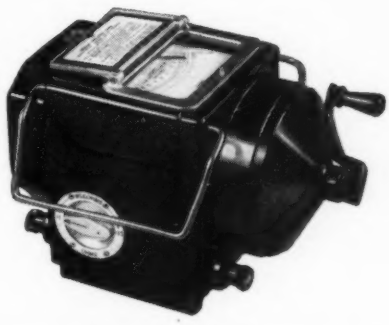
Scheduled Meetings

Recently, one of the leaders in our industry came up with a plan designed to accomplish this purpose. I, personally, have seen it in operation, and know that it *does* work. Consequently, I recommend it to you for consideration.

The idea is an outgrowth of the old town hall meeting program. At the time of conversion, an announcement is made to the effect that a public meeting will be held on a particular Tuesday (or some other day) of each month at a certain hour, and at a definite location. Everyone is invited. The purpose is to allow local customers the opportunity to speak directly with a representative of his serving company about those things which he does not like, or does not understand. Whether or not a large portion of the town's population turns out for the meeting is *not* of primary concern. The fact that the customer knows he has a regular and personal appointment with the company *is important.* Under normal circumstances, the negative results of such a meeting might be a collection of minor service complaints which you really would want to know about anyway. The positive results could be:

Telephone Trouble-Shooters Find Failures Faster with Biddle Electrical Testing Instruments

Whether it's maintenance, rehabilitation, or special development work, there's a dependable Biddle instrument practically made-to-order for any electrical testing job you face. It's good to know all about these fine instruments . . .
Have you sent for the latest literature?



MEGGER® INSULATION TESTERS

are the most generally accepted devices in the world for detecting incipient weaknesses in the insulation of nearly all types of electrical equipment.

Pictured here is the Meg type of Megger Insulation Tester—the most popular instrument in our line. Like all Megger Testers it contains its own power supply in the form of a hand generator —no batteries to let you down. This is a 400 v. instrument with a discharge switch.

For complete information write for
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MEGGER® GROUND TESTERS

measure the resistance to earth of ground connections simply, easily and accurately, and thereby help to determine whether such connections will perform the services for which they were designed and installed.

Pictured here is the CVM type of Megger Ground Tester. For complete information on all ranges and types of ground testers write for
BULLETIN 25-T

FRAHM® FREQUENCY METERS

Frequency measurements are made easy with this miniature portable Frahm Resonant Reed Frequency Meter. Vibrating reed tips form a pulsating pattern that makes it easy to read alternating current frequency from 15 to 1500 cycles per second.

Meter is applicable to pulsating or interrupted D-C as well as A-C supply circuits. Sturdy — no delicate pivots, jewels or moving parts. Remains relatively unaffected by external fields and is independent of load, power factor or phase shifts in supply circuit. Available in switchboard, miniature and portable types. Model illustrated is used for checking bell-ringers.
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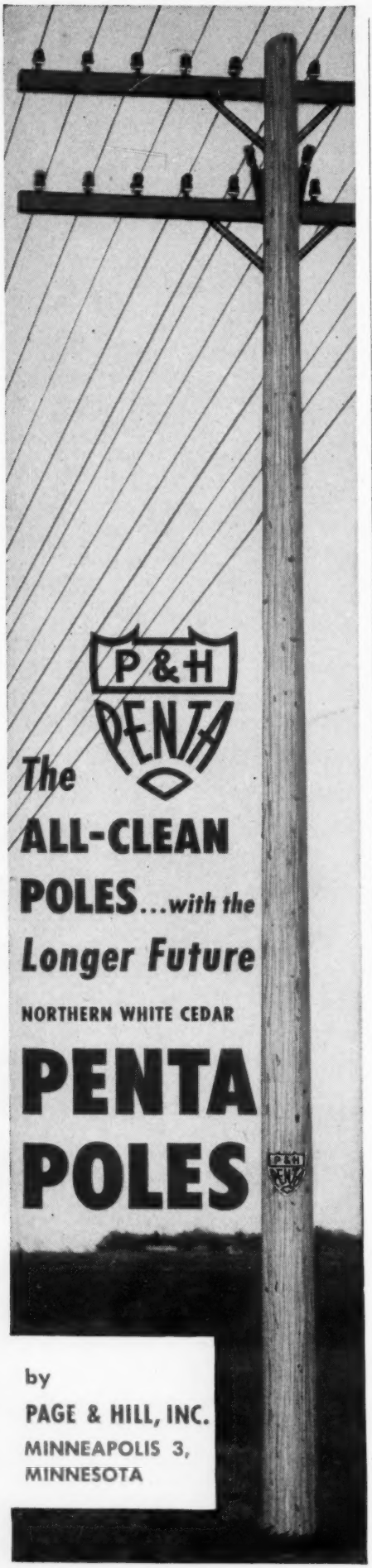

(1) That you maintained personal contact with your customers.

(2) Utilization of the opportunity to explain new traffic procedures, billing changes, payment locations, etc.

(3) Sales—I can think of no better time or place to display extensions in color, telephone answering devices, loud ringing bells, etc.

Our customers see these items attractively displayed in the magazines, but most people are not motivated to buy until they have satisfied their curiosity by handling the item. Certainly, the meeting would serve as an excellent opportunity to demonstrate equipment to interested customers.

I believe that if a meeting of this type were properly planned, publicized and held at regular intervals (maybe once a month would be too often in some communities) management need not fear that a "post-mortem" would be held on public relations. Instead the operations of the exchange could very possibly be improved beyond original expectations, and company public relations maintained at an even higher level.

Californian Receives First La Croix Silver Medal

A La Croix silver medal was awarded to one of General Telephone Co. of California's employees on Aug. 6 —the first silver medal to be presented to an employe in any General Telephone System company.

Answers to Questions On Page 28

(1) Mainly calls from the general public regarding matters requiring the attention of the business office which need specialized treatment. Also calls from the general public regarding numerous aspects of their business relations with the company and calls for certain employes of the company.

(2) Yes. The service should not only be speedy and accurate but outstanding in politeness and consideration.

(3) Prompt answers, prompt identification of persons called, frequent progress reports on uncompleted calls, avoidance of any impression of haste and a friendly, helpful manner at all times in dealing with customers.

(4) Say, "Telephone Company."

(5) The call should be suitably acknowledged and the connection established.

The silver medal winner, Frank Hess, Santa Monica equipment installer, was one of nine company employes who were presented La Croix awards for acts of heroism at an honorary luncheon held in Santa Monica. Company president, Edwin M. Blakeslee made the silver medal award presentation on behalf of Donald C. Power, president, General Telephone Corp.

Mr. Hess was awarded the coveted silver medal plus $500 cash, for snatching a small boy from the path of an oncoming automobile. A total of five La Croix awards were made at the luncheon. In addition to the silver medal, other awards were presented to: Charles P. Weiland, Santa Monica engineering fieldman — bronze medal plus $250 cash award; Mary-Lou Drake Archer and Lorraine Brandt, Reedley operators—certificates of meritorious service; Beverly J. Pangborn and Ruth E. Collett, Whittier operators —certificates of meritorious service.

Three of General Telephone Company's Redondo plant department employes were presented the bronze plaque—the first time this award has been made to any System company employe. The three men, Grady Sain, station installation foreman, Robert Graff and Edgar Wise, installers, were also given individual certificates of meritorious service.

The La Croix awards were inaugurated several years ago to honor General Telephone System employes for acts of heroism and meritorious service. The awards are named in honor of Morris Felton La Croix, chairman of the board of directors of General Telephone Corp. until his death in 1955.

Mr. La Croix was credited as the man who was mainly responsible for having organized the General Telephone System and had a long and distinguished career in business and public service.

Obituaries

DR. G. W. WAGER, 94, of Heflin, Ala., co-founder and operator of Heflin's first telephone exchange, died on July 14. Dr. Wager was the grandfather of H. W. Vaughan, president of Alabama Telephone Co., Inc., Fayette, Ala.

Attitude for Victory

"The Communist conspiracy can never succeed in America unless there is first destroyed the powers of the states. It can never succeed until the people are deprived of the power to control their local institutions."— JAMES O. EASTLAND, *U. S. Senator from Mississippi.*

XUM

Hubbard & Co. Announces $1,000,000 Research Center

Hubbard & Co. has announced plans to establish a new and extensive research and development center in the Chicago area involving an expenditure in excess of one million dollars.

"The new center will represent a major advance in research facilities for the industry. It will be unique in that it will integrate at one site the complete facilities to reproduce and evaluate realistically conditions encountered in utility system operations and construction," said Charles H. Dyson, chairman of the board.

Virtually every type of transient over-voltage and over-current disturbance on an actual system can be duplicated and its effect on distribution equipment and systems can be accurately analyzed. The center also is unique in that a number of lightning generators will be collectively capable of applying a wide variety of impulse voltage and current wave shapes either singly or repetitively to equipment or to sections of all types of live operating systems, the company states.

Located on a seven-acre site, the facilities will accommodate both electrical and mechanical laboratories.

The high power testing will be conducted at a specially designed substation adjacent to the main building. Power will be available to supply test currents as high as 20,000 amperes at various distribution voltages. Test operations may be controlled either at the substation or within the building at a master control station. Planning includes provision for closed circuit television to enable groups to observe testing in the comfort and safety of a projection room.

Hubbard & Co. recently purchased the complete high voltage laboratory equipment of Purdue University, which will be installed in the new research center. This includes a 3,200,000-volt impulse generator, an 80-kilowatt second 100,000-volt surge current generator, and a 600,000-volt 60-cycle, high voltage test set.

The building will house electrical, mechanical, chemical, and metallurgical laboratories including Hubbard's present equipment, a complete model shop, engineering offices, a reference library, and will have a high bay section designed to permit operation of the impulse generators at maximum voltage. A photographic section will include unusual photographic equipment which Hubbard & Co, research and development engineers use for ultra-high-speed recording of phenomena associated with high voltage and high current tests.

An outdoor area will be provided for

ANOTHER
MAJOR IMPROVEMENT
IN GALVANIZED
TELEPHONE WIRE

Crapo
HTL-195

The New LOWER RESISTANCE
Extra-High Tensile Line Wire

FOR EXTREME LONG-SPAN, LOW-COST RURAL LINES

A combination of telephonic transmission qualities and physical strength never before attained in a galvanized steel telephone wire now is available in **Crapo** HTL-195. This new, extra-high tensile line wire with superior electrical characteristics makes possible spans to 600 feet in Heavy, 650 feet in Medium and 700 feet in Light Loading Districts. The result: up to 40% reduction in the number of pole structures required with marked savings in materials and in construction costs.

The voice transmission effectiveness of **Crapo** HTL-195 is comparable to that of **Crapo** HTL-135 — the high tensile steel line wire which has contributed so much to the expansion and improvement of rural telephony. The telephonic transmission quality of both **Crapo** HTL-195 and **Crapo** HTL-135 is superior to that of older grades of ferrous wire.

Crapo HTL-195 can be employed to best advantage where terrain and other conditions permit the use of extremely long spans, for joint use with power circuits and for extensions to one or more subscribers in remote areas.

Investigate the practical and economical advantages of this new, revolutionary conductor — product of continuing research by Indiana Steel & Wire Company, Inc., pioneers in the development of high tensile steel telephone wire. Write for complete information, including Manual of Engineering Data, No. A-195.

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COMPANY, INC.
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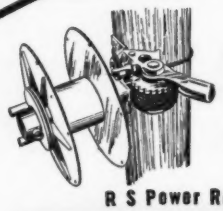
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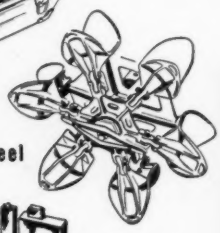
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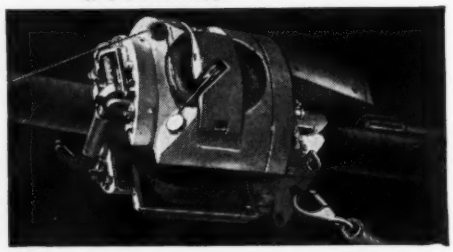

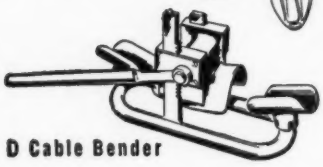
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Special Purpose Tools To Specifications
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Over 500 various items of Line Construction Tools, Maintenance & Pressure-Testing Equipment in stock for immediate Shipment

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Radio Engineering Products is currently producing a number of types of equipment, electrically and mechanically interchangeable with standard Bell System apparatus.

CARRIER-TELEPHONE EQUIPMENT

C5 Carrier-Telephone Terminal (J68756). A kit for adding a fourth toll-grade channel to existing C systems is available. • C1 Carrier-Telephone Repeater (J68757) • 121A C Carrier Line Filter • H Carrier Line Filter (X66217C).

CARRIER-TELEGRAPH EQUIPMENT

40C1 Carrier-Telegraph Channel Terminal (J70047C) • 140A1 Carrier Supply (J70036A1, etc.) • 40AC1 Carrier-Telegraph Terminal.

VOICE-FREQUENCY EQUIPMENT

V1 Telephone Repeater (J68368F) • Power Supply (J68638A1) • V1 Amplifiers (J68635E2 and J68635A2) • V3 Amplifier (J68649A) • V-F Ringers (J68602, etc.) • Four Wire Terminating Set (J68625G1) • 1C Volume Limiter (J68736C).

D-C TELEGRAPH EQUIPMENT

16B1 Telegraph Repeater (J70037B) • 10E1 Telegraph Repeater (J70021A) • 128B2 Teletypewriter Subscriber Set (J70027A).

TEST EQUIPMENT

2A Toll Test Unit (X63699A) • 12B, 13A, 30A (J64030A) and 32A (J64032A) Transmission Measuring Sets • 111A2 Relay Test Panel (J66118E) • 118C2 Telegraph Transmission Measuring Set (J70069K) • 163A2 Test Unit (J70045B) • 163C1 Test Unit (J70045D).

COMPONENTS AND ACCESSORIES

255A and 209FG Polar Relays • Repeating and Retard Coils, several types • 184, 185, 230A and 230B Jack Mountings.

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TELEPHONE UNiversity 6-6887
CABLES RADENPRO, MONTREAL

comprehensive outdoor electrical tests and mechanical tests. Space will be available for erection of pole lines, distribution structures, and pole line hardware assemblies under practical operating conditions. Facilities will include provision for full scale structure strength tests. Sections of power and communications lines will also be erected for test and demonstration purposes.

"It is believed that this integrated facility will efficiently provide answers to problems which are difficult to solve by any other means and will assure significant progress in research and development for the utility industry," said Mr. Dyson.

Hubbard & Co. is the world's largest manufacturer of pole line hardware and is a leading producer of electrical protective equipment. The company has plants and warehouses in Pittsburgh, Chicago, Oakland, Cal., and Plano, Tex.

Stromberg's Dr. Wilson Heads AIEE Committee

Dr. Donald G. Wilson, associate director of research of Stromberg-Carlson, a division of General Dynamics Corp., has been appointed chairman of the electronics committee of the American Institute of Electrical Engineers, effective Aug. 1.

The Institute is a large national professional organization of electrical engineers. The electronics committee has jurisdiction over all activities of the Institute in "all matters in which the dominant factor is electronics, particularly those dealing with the design, characteristics or behavior of devices of an electronic nature, or of the circuits associated with them."

The committee will comprise 12 subcommittees totaling approximately 150 members, from all sections of the country, and representing all segments of the electronics industry.

The Heavy Hand

"The one conspicuous place where you can plant most of the responsibility for this modern Moloch [inflation], which is consuming the substance of America, is cost of government."—*Excerpt from American Public Service Bureau Bulletin.*

Key to the Future

"For free men the real challenge of the future was put by Herbert Hoover when he said that 'the greatest issue in America and all mankind is the encroachments of government to master our lives.' How that challenge is met will determine more than the future of a party. It will determine the future of the nation."—EDITORIAL STATEMENT, *The Wall Street Journal.*

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OF Stainless Steel

You get a neat and long-lasting job every time you use PAGE Stainless Steel Lashing Wire! Ideal for lashing conductor cables (lead or neoprene covered) to a strand messenger by Neale or Western Electric Machine. Coils tailored to fit machine specified.

3 GRADES · EACH IN 2 SIZES (.065 and .045)

Type 430 · for use with galvanized messengers
Type 302 · for use with stainless messengers
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Furnished six coils in cardboard carton (minimum order).

Other fine-quality products · You can depend upon PAGE Strand (Stainless or Galvanized Steel) and PAGE Stainless Dead-End Wire · See your Telephone Supply Distributor, or write our Monessen, Pa., office.

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PORCELAIN ENAMEL
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- Special designs if desired
- Highest quality—fully guaranteed

Over a half-century of experience is reflected in the design and manufacture of Ing-Rich porcelain enameled telephone signs.

Three representative Ing-Rich Signs for independent telephone companies. Beaded surface increases night visibility.

Member, Sign Division, Porcelain Enamel Institute, Inc.
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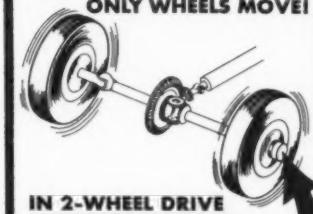
FRONT DRIVE WITH FREE-LOCK HUBS

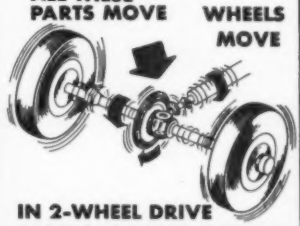
LOW OPERATING COSTS
ALL PARTS STOP ONLY WHEELS MOVE!



IN 2-WHEEL DRIVE NO PARTS MOVING

FRONT DRIVE — NO FREE-LOCK HUBS

HIGH OPERATING COSTS
ALL THESE PARTS MOVE **WHEELS MOVE**



IN 2-WHEEL DRIVE OVER 100 PARTS MOVING —WEARING!

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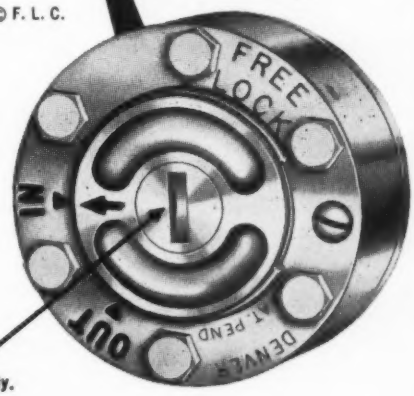

If necessary, a 1/16th inch turn engages hub instantly.

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Cut maintenance costs! Get 2-wheel drive economy, still having instant use of 4-wheel drive when needed.

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ARAMCO Cuts Over New AE Equipment in Saudi Arabia

A new automatic telephone exchange has been cut over at Dhahran, Saudi Arabia, to improve and expand the communication facilities of the Arabian American Oil Co. (ARAMCO).

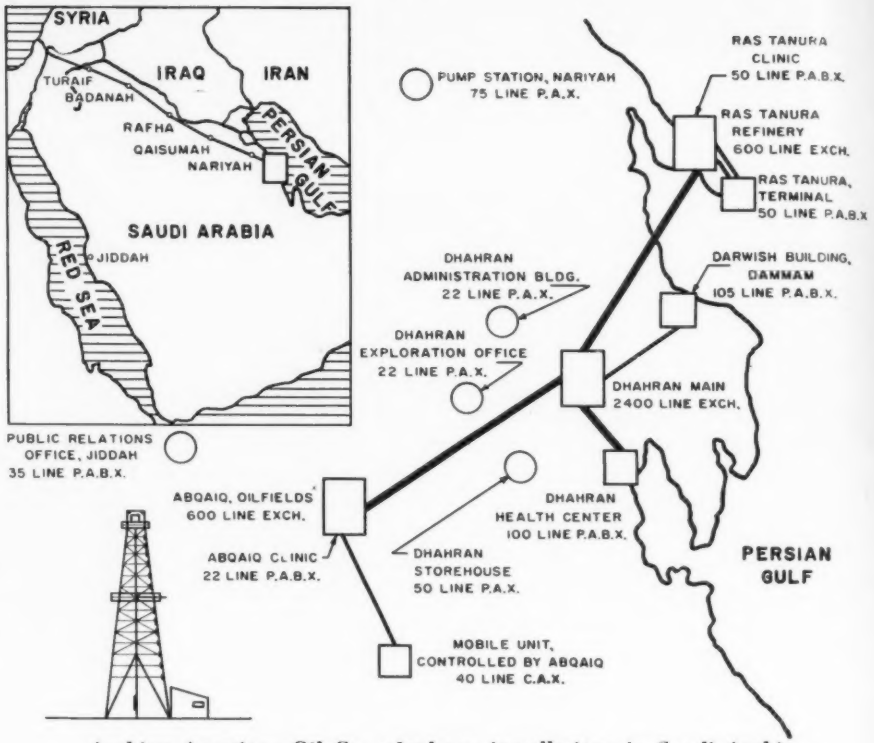
This new exchange, containing 2,400 lines and 4,800 terminals, was placed in service at ARAMCO's headquarters to replace a smaller exchange which had been expanded from 400 to 1,000 lines, but which could not be further expanded because of lack of physical space. The older equipment is being used to expand other exchanges at the neighboring districts of Ras Tanura and Abqaiq.

The new equipment at Dhahran was manufactured and installed by Automatic Electric Co. of Northlake, Ill. The equipment is interchangeable with those of other ARAMCO exchanges which were manufactured by the parent company.

Among the special services offered by the Dhahran exchange are a conference system, announcer system, and a special fire-reporting system.

Any telephone instrument in the ARAMCO system can be connected automatically by dialing with any other instrument in the system. In addition, with the aid of the central operator in Dhahran, subscribers can talk to the Dhahran police station, the American Consulate, the U. S. Air Force base and the neighboring town of al-Khobar.

The Saudi Arab government recently completed a radio link between Dammam and Jiddah. It is now possible



Arabian American Oil Co. telephone installations in Saudi Arabia.

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Telephone Diamond 1-9212

Two Saudi Arab expert "trouble shooters" work on a telephone line in the Dhahran residential section as the rest of a mobile communications repair crew stand by. (Photo, Arabian American Oil Co.)

to place international toll calls over this link from the ARAMCO system. For the first time ARAMCO employes can call their families anywhere in the world.

Some American telephone engineers say the ARAMCO telephone system is the busiest they have ever encountered. Its exceptionally high average usage rate is more than 20 calls per unit, per day.

For many years, the company has conducted training classes in telephony for Saudi Arabs, supplemented by on-the-job training in United States telephone exchanges for young Saudi men. Telephone service, despite the problems of the desert and extreme temperature, is comparable to that in any modern telephone network in America. Experienced Saudi Arab and American linemen, installers, cable splicers and office personnel keep the operation running smoothly.

A wire line connection that formerly linked Dhahran and Ras Tanura, which had been constructed along a heavily traveled highway, had to be abandoned because of its "high mortality" rate. VHF (very high frequency) radio channels now link Dhahran with the other districts and more will be added.

Stromberg Promotes R. Holt To Service Engineer Post

Robert H. Holt has been promoted to the position of service engineer with the telecommunication division of Stromberg-Carlson, a division of General Dynamics Corp. In his new capacity Mr. Holt will make headquarters in Portland, Ore., and will serve the territory of the telecommunication division's west coast branch office, in-

Here's a telephone battery that:

lasts at least 40% longer!

requires 80% less current and water!

delivers high output all its life!

C&D's PlastiCal® is the most outstanding floating-service battery of the last 50 years. Here's a basically new battery that combines a durable, clear-plastic case with lead-calcium* grids. This new alloy of pure lead and calcium gives grids the strength of those with a large antimony content, but eliminates the harmful effects of antimony.

C&D's PlastiCal has these advantages:

1. *a 40% longer life* than any lead-antimonial battery in floating-service. There is no antimony in the PlastiCal to poison negative plates.
2. *requires 80% less current* to maintain itself in a fully charged condition. Lower charging rate means plates last longer.
3. *requires 80% less water.* Because PlastiCal uses less current, there is less electrolysis of water.
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5. *delivers high output throughout its life.* Rated capacity remains steady because negative plates do not become contaminated.

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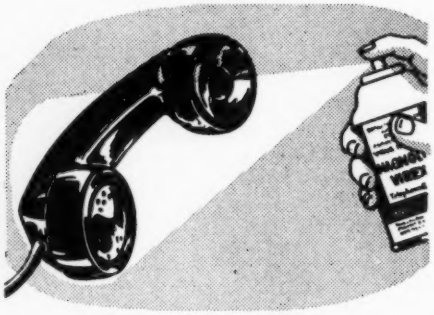

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- It has a pleasant odor and reduces lost time caused by sickness.

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R. H. HOLT

cluding the states of Washington, Oregon, California, Nevada, Utah, Idaho, and Montana.

Announcement of his appointment was made by David Balis, manager of installation and service, telecommunication division. Mr. Balis said that Eugene Sullivan, who has been west coast service engineer for the past several years, has returned to Rochester headquarters for a training program before starting a new assignment with the sales department.

Mr. Holt brings to his new position many years of practical experience as installer, installation foreman, and systems engineer. He joined Stromberg-Carlson as an installer in 1951, after two years with the Western Electric Co. in a similar capacity. A year later he was promoted to installation foreman, and subsequently was brought into the division's headquarters in Rochester as a telephone systems engineer. Prior to his original position as an installer, Mr. Holt had been service manager for the Elliott Addressing Machine Co. He also completed three years of military duty with the Transportation Services, which took him to Hawaii, Japan, Korea, China, Panama, and Germany.

Among the installations of XY dial equipment which he supervised were two exchanges in Alabama where the equipment is "floated" on rubber mountings because of proximity to a quarry where there is frequent blasting, central office equipment in Saluda, S. C., and McIntosh, Fla., and large PBX's in Rochester's biggest hospital, and in the largest department store in western New York state. He also served as systems engineer for one of the first Stromberg-Carlson line identifying (LID) toll ticketing applications in a mixed terminal-per-line, terminal-per-station office.

A native of Stonington, Conn., Mr. Holt attended schools in Bridgeport.

Move Kellogg Sales Office

Kellogg Switchboard & Supply Co., a division of International Telephone & Telegraph Corp., announced that as of Aug. 15 it has moved its general sales offices from 79 W. Monroe St., Chicago, to 6650 South Cicero Ave., Chicago 38, Ill.

The Springboard

"No action will be considered as blameless unless the will was so; for by the will the act was dictated."—SENECA.

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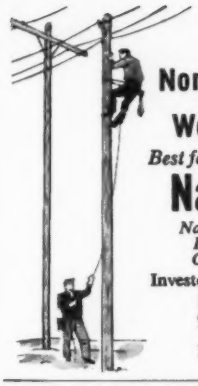

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C. M. Christiansen Co.—Northern White Cedar Poles, Pentachlorophenol treated. Plant and Yards, Phelps, Wis.

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Classified advertisements must reach us 8 days before publication date.

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TELEPHONE RATE ACCOUNTANT. Desire experience in computing telephone end in public utility rates. Salary to $7,500.00 yearly. Write Box No. 3997, c/o TELEPHONY.

CHIEF OPERATOR—familiar with intertoll dial, capable of supervising entire traffic department, Southern state. Write Box No. 4006, c/o TELEPHONY.

COMBINATIONMAN for two small exchanges in Upstate New York area. One Dial, one Magneto being converted to Dial. State experience, present wages and give references in your first letter. Write Box No. 4002, c/o TELEPHONY.

WANTED: Telephone Installers, Cable Splicers, Linemen, Central Office Installers. Yates Construction Company, 1507 South 6th St., Paducah, Kentucky. Telephone 2-4623.

SALES REPRESENTATIVE to travel southern territory. Will handle well established product with limited competition. Must be able to talk to executives and engineers of both telephone and power companies and work with jobbers. Should have knowledge of up to date outside plant construction, also sales experience. Salary open. Include full resumé of education and experience with reply. Write Box No. 3999, c/o TELEPHONY.

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CABLE SPLICERS, Station Installers, Equipment Installers, Linemen. Experienced men needed. Steady work, good pay. Henkels & McCoy, 1211 Kenmore Avenue, Elkhart, Indiana, or 6100 N. 20th St., Philadelphia, Pa.

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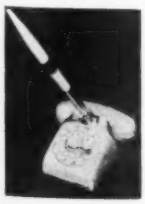

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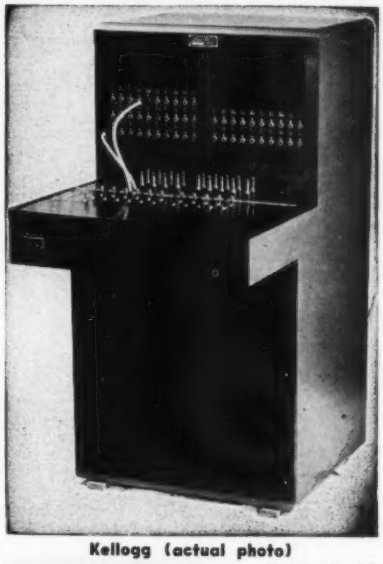

Kellogg (actual photo)

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←*(photo to left)*

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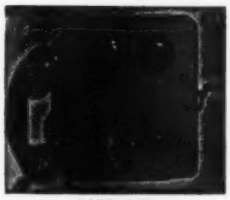

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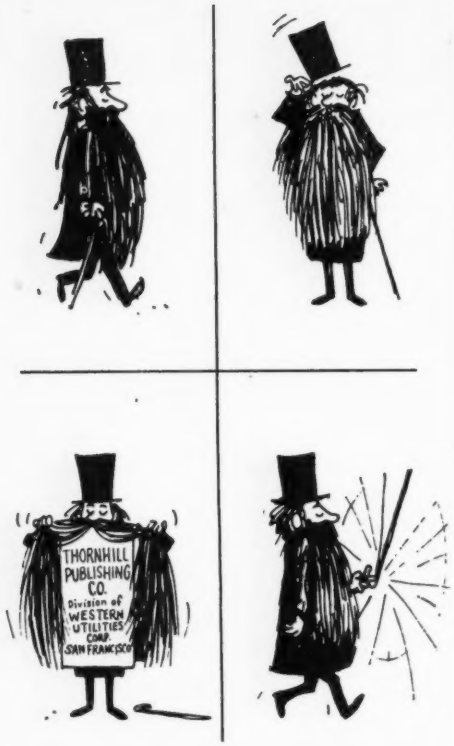

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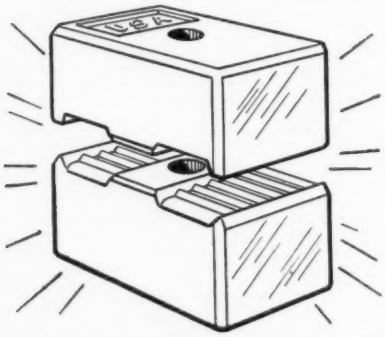

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Index to ADVERTISERS

	Page
Acme Visible Records, Inc.	27
Alphaduct Wire & Cable Co., The	—
Aluminum Company of America	—
American Appraisal Company, The	—
American Chain & Cable Co., Inc. Page Steel & Wire Div.	63
American Creosoting Corporation	41
American Electrical Heater Co.	—
American Steel & Wire Co.	—
American Telephone & Telegraph Co.	—
Anaconda Wire & Cable Co.	—
Ansonia Wire & Cable Co., The	—
Armstrong Cork Co., Glass Insulators	—
Atlantic Creosoting Co., The	67
Automatic Electric Sales Co.	12-13, 36-37, 57, 71
Bakelite Company	29
Baker Wood Preserving Co.	67
Bashlin Company, W. M.	—
Bell Telephone Laboratories, Inc.	—
Benner-Nawman, Inc.	66
Berry & Co., L. M.	—
Bethlehem Steel Co.	—
Biddle Co., James G.	59
Bishop Manufacturing Corp.	—
Blaw-Knox Company	—
Bohnsack Equipment Co.	—
British Insulated Callenders' Cables, Ltd.	31
Buckeye Telephone & Supply Co.	52, 68
Burgess Manning Company	—
Burroughs Corp.	11
C&D Batteries, Inc.	65
Cabaniss-Pogue Co.	67
Cable Breather Corp.	—
Cable Spinning Equipment Co.	—
Calculagraph Company	—
Chance Co., A. B.	51
Chase Brass & Copper Co.	—
Cleveland Inst. of Radio Electronics	—
Coffing Hoist Div.	—
Colorado Fuel & Iron Co., The	—
Commercial Cord and Supply Co.	—
Comptometer Corporation	—
Conroe Creosoting Co.	67
Cook Electric Company	—
Copperweld Steel Co.	—
Crane, Inc., Carl C.	67
Cullom & Ghertner	—
Davis Construction Co.	67
Donnelley & Sons, R. R.	—
Dow Chemical Co., The	—
Du Pont de Nemours & Co., E. I.	—
Duo-Safety Ladder Corp.	—
Eastman Chemical Products, Inc.	—
Edmund Scientific Company	—
Electric Specialty Co.	43
Electronic Secretary Industries, Inc.	49
Everstick Anchor Co.	—
Exide Industrial Division— The Electric Storage Battery Co.	—
Fitchburg Engineering Corporation	—
Foley Constr. Co., Robert E.	66
Free-Lock Corporation	63
General Cable Corporation	—
General Insulated Wire Works, Inc.	—
General Machine Products Co., Inc.	62
General Telephone Directory Co.	16
Gorman Rupp Company	—
Gould-National Batteries, Inc.	—
Graybar Electric Co.	14-15
Greenlee Tool Co.	—
Haley & Co., R. G.	—
Harris-McBurney Company	—
Henkels & McCoy	66
Highway Trailer Company	—
Hirsch Organization, Inc., Gustav	—
Holan Corp., J. H.	—
Homelite Corp.	—
Hubbard & Company	—
Indiana Steel & Wire Co.	61
Industrol Corporation	—
Ingram-Richardson Mfg. Co.	63
International Business Machines Corp.	—
International Harvester Co.	—
Irwin Auger Bit Co.	—
Johns-Manville	50
Katolight Corp.	—
Kearney Co., Jas. P.	—
Kellogg Switchboard & Supply Co.	6-7
Kennecott Wire & Cable Co.	—
Killoren Company	—
Klein & Sons, Mathias	58
Koiled Kords, Inc.	33
Koppers Co., Inc.	—
Leich Sales Corporation	54-55
Lindsay Telephone Supply Co.	64
Line Equipment Sales	67
Lorain Products Corp., The	—
Magnolia Chemical Company, Inc.	66
McFarland Company, L. D.	67
McGrath Engineering, Inc.	67
Morrison-Pelsue Co.	—
Mullen Construction Co.	—
Murphy Engineering Laboratories	—
Natco Corporation	—
National Pole & Treating Div.	67
National Standard Company	—
National Telephone Supply Co.	72
Neubauer Manufacturing Co.	—
Neuses, Inc. P. K.	—
North Electric Company	8-9
Onan & Sons, D. W.	—
Orangeburg Manufacturing Co., Inc.	39
Osmose Wood Preserving Co.	—
Owens-Illinois	—
Page & Hill, Inc.	60
Page Steel & Wire Div. American Chain & Cable Co., Inc.	63
Phelps Dodge Copper Products Corp.	—
Philco Corp. Gov't & Industrial Div.	—
Philco TechRep. Division	68
Porcelain Products, Inc.	70
Porter, Inc., H. K.	—
Preformed Line Products Co.	—
Prewitt & Sons, Inc., J. R.	—
Radio Engineering Products Limited	62
Raytheon Mfg. Co.	—
Recordak Corp.	—
Reliable Electric Corp.	—
Remington Rand Div.	—
Rex Corporation, The	53
Reynolds Metals Company	—
Roebling's Sons Corp., John A.	—
Rolatape, Inc.	56
Runzel Cord & Wire Co.	—
S&G Manufacturing Corp.	—
Schauer Mfg. Co.	—
Sequoia Process Corp.	—
Sierra Electronic Corp.	—
Sloan, Cook & Lowe Co.	67
Soapstone Duct Co.	—
Stainless, Inc.	—
Stanley-Yankee Tools, Inc. a subsidiary of The Stanley Works	—
Stewart Bros.	—
Stewart-Warner Corp., Electronics Div.	—
Stromberg-Carlson Co.	2-3, 46-47, 69
Superior Cable Corporation	—
Suttle Equipment Co.	—
Taylor-Colquitt Co., The	—
Telectric Co., The	69
T.E.I. Corp.	67
Tele-Muff Co.	—
Telephone & Power Supply Co.	—
Teletype Corp.	—
Telkor, Inc.	—
Templeton, Kenly & Co.	—
Thornhill Publishing Co.	70
Truck Equipment Co.	66
Tudor & Yager, Inc.	67
U. S. Cable Constructors, Inc.	67
United States Independent Telephone Association	35
United States Instrument Corp.	—
United States Steel Corp. American Steel & Wire Co.	—
Universal Controls Corp.	67
Utica Drop Forge & Tool Div.	—
Utility Body Co.	—
Utility Tool & Body Co.	67
Warren Manufacturing Co., Inc.	—
Weikel Line Company	67
Western Electric Co.	44-45
Wheelock Signals, Inc.	—
White Motor Company, The	25
Whitney-Blake Co.	4-5
Williams Inspection Co., Inc., A. W.	67
Wiremold Co., The	—
Yates Construction Co.	67
York-Hoover Corporation	—

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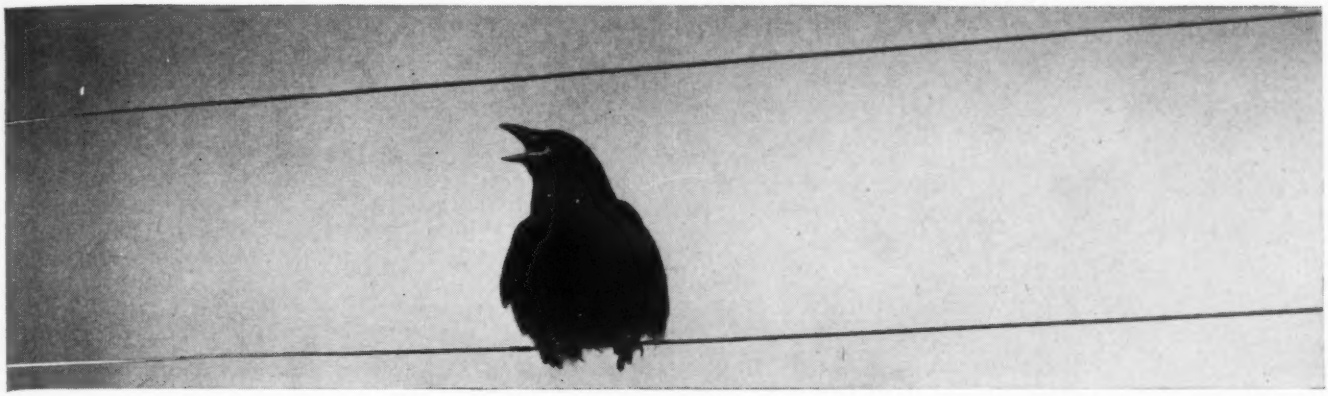

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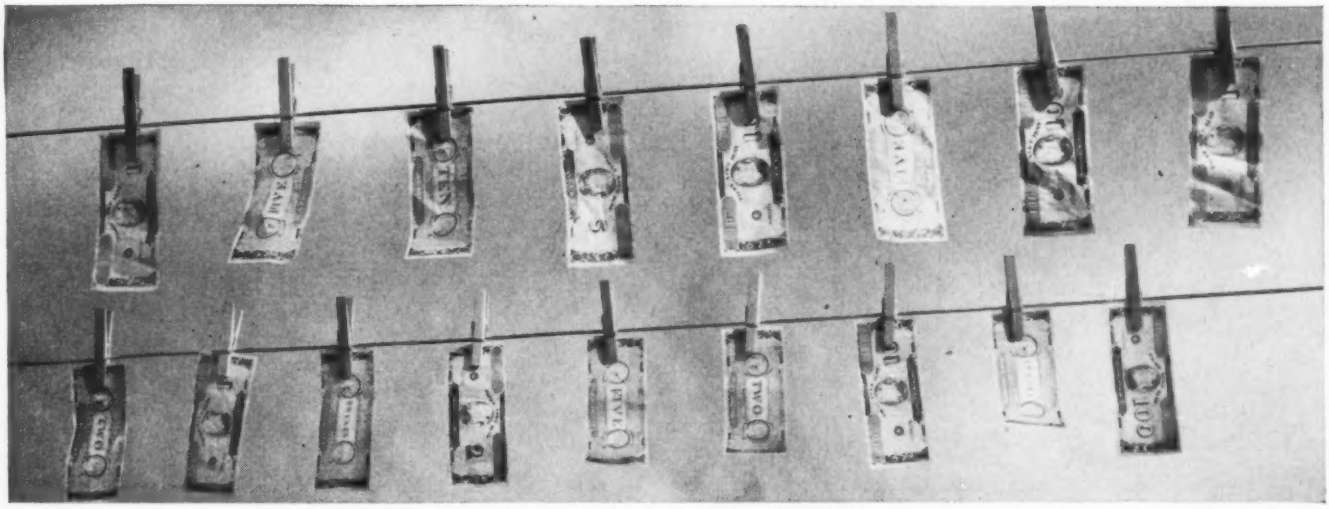

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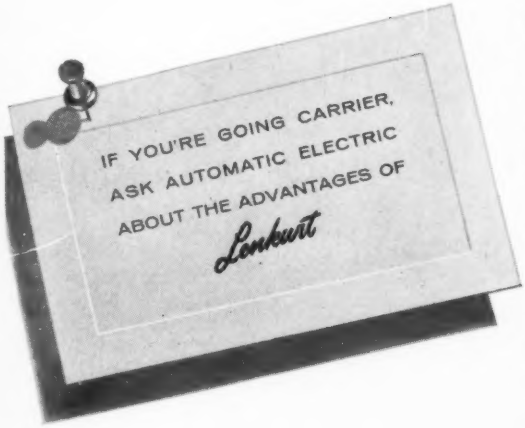

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